

Report No.: FR760510 Project No: CB10607145

# **FCC Test Report**

Equipment : BLE Mini Hybrid Watch

Model No. : NDW4A, NDW4G, NDW4H, NDW4J, NDW4K

EMC sample S/N : MZ10FDV0PL, MZ10FDV0PW, MZ10LDV0ZZ,

MZ10LDV0ZT, MZ10LDV0RP, MZ10FDV1H5,

MZ10LDV0UA

Radiated sample S/N : MZ10FDV1C4, MZ10FDV1PD, MZ10FDV1Q0,

MZ10FDV1PG, MZ10FDV1TK, MZ10FDV1RE,

MZ10FDV1Q3

Conducted sample S/N : MZ10FDV160

FCC ID : UK7-NDW4A

Standard : 47 CFR FCC Part 15.247

Frequency : 2400 MHz - 2483.5 MHz

Function : Point-to-multipoint; Point-to-point

Applicant : Fossil Group, Inc.

901 S. Central Expressway Richardson TX 75080

USA

Manufacturer : Fossil Group, Inc.

901 S. Central Expressway Richardson TX 75080

USA

The product sample received on Jun. 05, 2017 and completely tested on Jun. 28, 2017. We, SPORTON, would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.10-2013 and shown compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONALINC., the test report shall not be reproduced except in full

Cliff Chang

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**PHOTOGRAPHS OF EUT V01** 

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# **Summary of Test Result**

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	Conformance Test Specifications						
Report Clause	Ref. Std. Clause	Description	Limit	Result			
1.1.2	15.203	Antenna Requirement	FCC 15.203	Complied			
3.1	15.247(a)	DTS Bandwidth	≥500kHz	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 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.

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# **Revision History**

Report No.	Version	Description	Issued Date
FR760510	Rev. 01	Initial issue of report	Jul. 20, 2017

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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
2.4-2.4835GHz	BT-LE(1Mbps)	1	1TX

#### Note:

- 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.

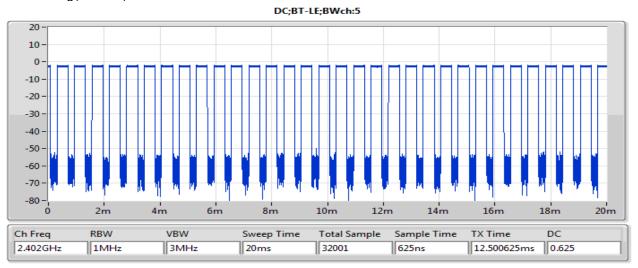
#### 1.1.2 Antenna Information

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	-	-	Printed Antenna	N/A	-10

#### 1.1.3 Mode Test Duty Cycle

Mode	DC	DCF(dB)	T(s)	VBW(Hz) ≥ 1/T
BT-LE(1Mbps)	0.625	2.041	390.625u	3k

Note: 10\*log(1/0.625)=2.041



Note: Duty cycle = TX time/sweep time

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## 1.1.4 EUT Operational Condition

EUT Power Type	Normal Link: From battery (3V)
Lot i ower type	Continuous transmitting: From DC power supply

#### 1.1.5 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	Material of Watch Band	EUT	Description
NDW4A	MZ10FDV1C4	MZ10FDV0PL	Leather	EUT 1	
NDW4A	MZ10FDV1PD	MZ10FDV0PW	Metal	EUT 2	All the models are
NDW4G	MZ10FDV1Q0	MZ10LDV0ZZ	Leather	EUT 3	identical, the difference
NDW4H	MZ10FDV1PG	MZ10LDV0ZT	Metal	EUT 4	model names because of
NDW4J	MZ10FDV1TK	MZ10LDV0RP	Leather	EUT 5	different outward
NDW4J	MZ10FDV1RE	MZ10FDV1H5	Metal	EUT 6	appearance of EUT.
NDW4K	MZ10FDV1Q3	MZ10LDV0UA	Metal	EUT 7	

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.

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## 1.2 Testing Applied Standards

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

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- 47 CFR FCC Part 15
- ANSI C63.10-2013
- FCC KDB 558074 D01 v04
- FCC KDB 412172 D01 v01r01

## 1.3 Testing Location Information

	Testing Location						
	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			
$\boxtimes$	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	Brian Sun / Eddie Weng	23°C / 55%	Jun. 12, 2017~Jun. 16, 2017
Radiated	03CH01-CB	Zero Chen / Welson Chen Mason Chen	22°C / 59%	Jun. 09, 2017~ Jun. 28, 2017

Test site Designation No. TW0006 with FCC.

Test site registered number IC 4086D with Industry Canada.

## 1.4 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 <sup>-8</sup>	Confidence levels of 95%

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2 Test Configuration of EUT

## 2.1 Test Channel Mode

Mode	Power Setting
BT-LE(1Mbps)	-
2402MHz	Default
2440MHz	Default
2480MHz	Default

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## 2.2 The Worst Case Measurement Configuration

Tł	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	

Th	e 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 in X axis
2	EUT 1 in Y axis
3	EUT 1 in Z axis
Mode 2 has been evaluate follow this same test mode	ed to be the worst case among Mode 1~3, thus measurement for Mode 4~9 will e.
4	EUT 2 in Y axis
5	EUT 3 in Y axis
6	EUT 4 in Y axis
7	EUT 5 in Y axis
8	EUT 6 in Y axis
9	EUT 7 in Y axis
Mode 8 generated the wor	st test result, so it was recorded in this report.

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Operating Mode > 1GHz	СТХ	
The EUT was performed at X axis, Y axis and Z axis position. The worst case was found at Y axis for Mode 1 ~ Mode 7, thus measurement for all modes will follow this same test mode		
1	EUT 1 in Y axis	
2	EUT 2 in Y axis	
3	EUT 3 in Y axis	
4	EUT 4 in Y axis	
5	EUT 5 in Y axis	
6	EUT 6 in Y axis	
7	EUT 7 in Y axis	

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## 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)

	ot one no. occiner ob	BOIGH TOTIL		
	Support Equipment			
No.	Equipment	Brand Name	Model Name	FCC ID
1	iPad	Apple	A1430	DoC

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	NB	DELL	E4300	DoC
2	Power Supply	Advanced	LPS-305	N/A

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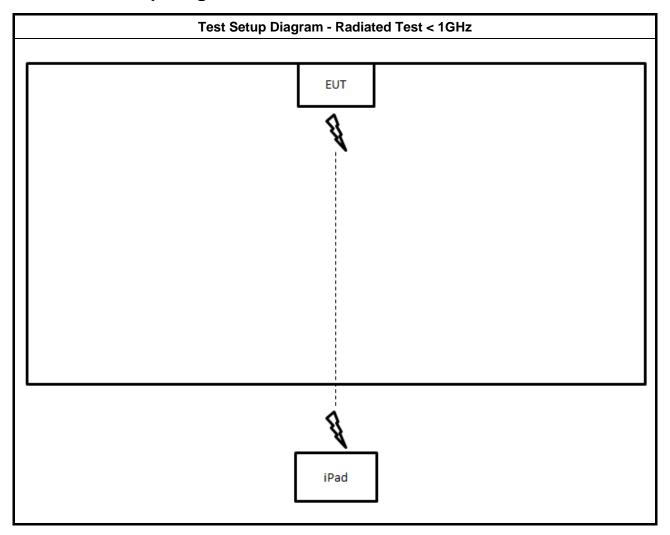
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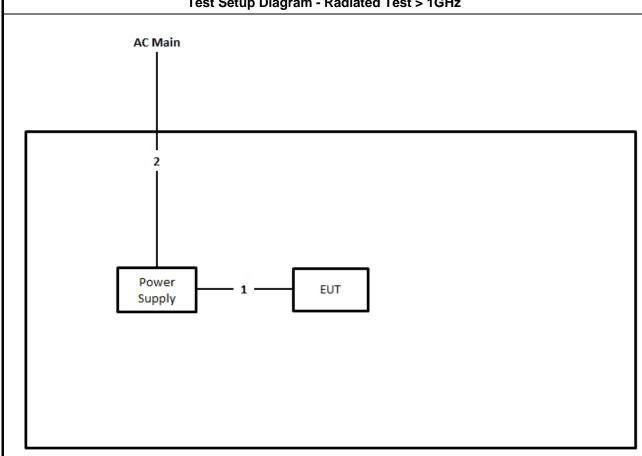
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#### **Test Setup Diagram** 2.6



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**Report No.: FR760510** Test Setup Diagram - Radiated Test > 1GHz



Item	Connection	Shielded	Length
1	Crocodile clip	No	1m
2	Power cable	No	1.8m

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## 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 ≥ 500 kHz.

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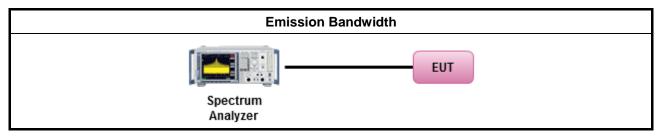
### 3.1.2 Measuring Instruments

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:		
	$\boxtimes$	Refer as FCC KDB 558074, clause 8.1 Option 1 for 6 dB bandwidth measurement.	
		Refer as FCC KDB 558074, clause 8.2 Option 2 for 6 dB bandwidth measurement.	
		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

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#### 3.2 Maximum Conducted Output Power

#### 3.2.1 Maximum Conducted Output Power Limit

#### **Maximum Conducted Output Power Limit**

- If  $G_{TX} \le 6$  dBi, then  $P_{Out} \le 30$  dBm (1 W)
- Point-to-multipoint systems (P2M): If  $G_{TX} > 6$  dBi, then  $P_{Out} = 30 (G_{TX} 6)$  dBm
- Point-to-point systems (P2P): If  $G_{TX} > 6$  dBi, then  $P_{Out} = 30 (G_{TX} 6)/3$  dBm
- Smart antenna system (SAS):
  - Single beam: If  $G_{TX} > 6$  dBi, then  $P_{Out} = 30 (G_{TX} 6)/3$  dBm
  - Overlap beam: If  $G_{TX} > 6$  dBi, then  $P_{Out} = 30 (G_{TX} 6)/3$  dBm
  - Aggregate power on all beams: If  $G_{TX} > 6$  dBi, then  $P_{Out} = 30 (G_{TX} 6)/3 + 8$ dB dBm

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 $\mathbf{P}_{\text{Out}}$  = maximum peak conducted output power or maximum conducted output power in dBm,  $\mathbf{G}_{\text{TX}}$  = the maximum transmitting antenna directional gain in dBi.

#### 3.2.2 Measuring Instruments

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

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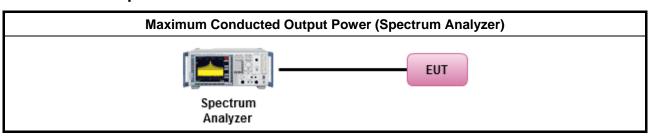
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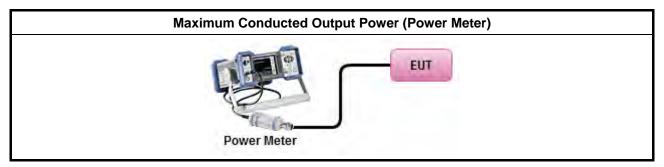
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#### 3.2.3 Test Procedures

	Test Method
•	Maximum Peak Conducted Output Power
	Refer as FCC KDB 558074, clause 9.1.1 Option 1 (RBW ≥ EBW method).
	☐ Refer as FCC KDB 558074, clause 9.1.2 Option 2 (peak power meter for VBW ≥ DTS BW)
•	Maximum Conducted Output Power
	[duty cycle ≥ 98% or external video / power trigger]
	Refer as FCC KDB 558074, clause 9.2.2.2 Method AVGSA-1 (spectral trace averaging).
	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
	Refer as FCC KDB 558074, clause 9.2.2.4 Method AVGSA-2 (spectral trace averaging).
	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
	Refer as FCC KDB 558074, clause 9.2.3 Method AVGPM-G (using an RF average power meter).
•	For conducted measurement.
	■ 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 <sub>total</sub> = P <sub>1</sub> + P <sub>2</sub> + + P <sub>n</sub> (calculated in linear unit [mW] and transfer to log unit [dBm])  EIRP <sub>total</sub> = P <sub>total</sub> + DG

## 3.2.4 Test Setup





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3.2.5 Test Result of Maximum Conducted Output Power

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## 3.3 Power Spectral Density

#### 3.3.1 Power Spectral Density Limit

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

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#### 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).								
	⊠ F	Refer as FCC KDB 558074, clause 10.2 Method PKPSD (RBW=3-100kHz; Detector=peak).							
	[duty	cycle ≥ 98% or external video / power trigger]							
İ		Refer as FCC KDB 558074, clause 10.3 Method AVGPSD-1 (spectral trace averaging).							
		Refer as FCC KDB 558074, clause 10.4 Method AVGPSD-2 (slow sweep speed)							
	duty o	cycle < 98% and average over on/off periods with duty factor							
		Refer as FCC KDB 558074, clause 10.5 Method AVGPSD-1 Alt (spectral trace averaging).							
		Refer as FCC KDB 558074, clause 10.6 Method AVGPSD-2 Alt. (slow sweep speed)							
•	For co	onducted measurement.							
	•	f The EUT supports multiple transmit chains using options given below:							
		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.							
Option 2: Measure and sum spectral maxima across the outputs. With this technique are measured at each output of the device at the required resolution bandw maximum value (peak) of each spectrum is determined. These maximum values summed mathematically in linear power units across the outputs. These operations performed separately over frequency spans that have different out-of-band or emission limits,									
		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.							

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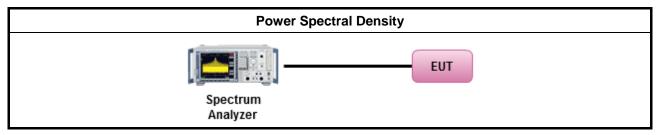
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#### **Test Setup** 3.3.4



## **Test Result of Power Spectral Density**

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## 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			

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- 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.

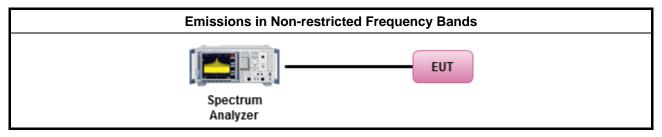
#### 3.4.2 Measuring Instruments

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

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## 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			

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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 below30 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.

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## 3.5.3 Test Procedures

	Test Method						
•	The average emission levels shall be measured in [duty cycle ≥ 98 or duty factor].						
•	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.						
•	For the transmitter unwanted emissions shall be measured using following options below:						
	<ul> <li>Refer as FCC KDB 558074, clause 12 for unwanted emissions into restricted bands.</li> </ul>						
	☐ Refer as FCC KDB 558074, clause 12.2.5.1 Option 1 (trace averaging for duty cycle ≥98%)						
	Refer as FCC KDB 558074, clause 12.2.5.2 Option 2 (trace averaging + duty factor).						
	Refer as FCC KDB 558074, clause 12.2.5.3 Option 3 (Reduced VBW≥1/T).						
	☐ Refer as ANSI C63.10, clause 4.2.3.2.3 (Reduced VBW). VBW ≥ 1/T, where T is pulse time.						
	Refer as ANSI C63.10, clause 4.2.3.2.4 average value of pulsed emissions.						
	Refer as FCC KDB 558074, clause 12.2.4 measurement procedure peak limit.						
•	For the transmitter band-edge emissions shall be measured using following options below:						
	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.						
	<ul> <li>Refer as FCC KDB 558074, clause 13.2 (ANSI C63.10, clause 6.9.3) for marker-delta method for band-edge measurements.</li> </ul>						
	<ul> <li>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).</li> </ul>						
•	For conducted and cabinet radiation measurement, refer as FCC KDB 558074, clause 12.2.2.						
	<ul> <li>For conducted unwanted emissions into restricted bands (absolute emission limits).</li> <li>Devices with multiple transmit chains using options given below:</li> <li>(1) Measure and sum the spectra across the outputs or</li> <li>(2) Measure and add 10 log(N) dB</li> </ul>						
	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.						

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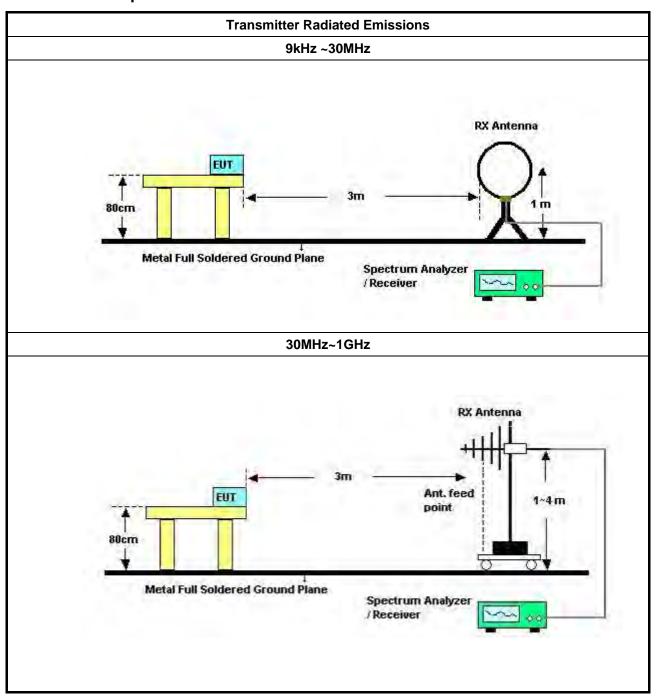
 TEL: 886-3-3273456
 Report Version
 : Rev. 01

 FAX: 886-3-3270973
 Issued Date
 : Jul. 20, 2017

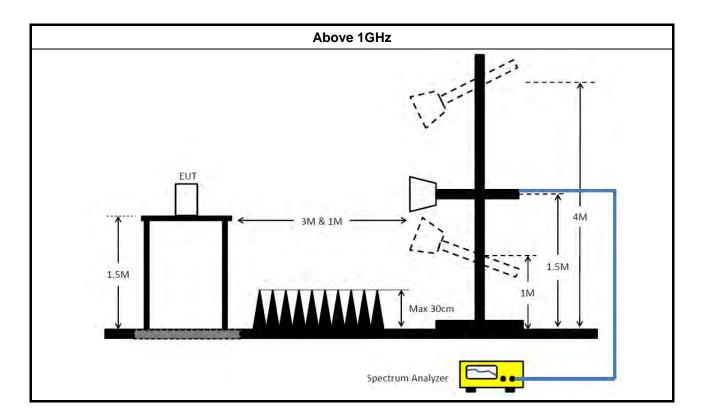


**Report No.: FR760510** 

#### Test Setup 3.5.4



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## 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

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4 Test Equipment and Calibration Data

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Loop Antenna	Teseq	HLA 6120	24155	9kHz - 30 MHz	Mar. 16, 2016*	Radiation (03CH01-CB)
BILOG ANTENNA with 6dB Attenuator	TESEQ & EMCI	CBL6112D & N-6-06	37880 & AT-N0609	20MHz ~ 2GHz	Aug. 30, 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	EMCI	EMC330N	980332	20MHz ~ 3GHz	May 02, 2017	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8449B	3008A02310	1GHz ~ 26.5GHz	Jan. 16, 2017	Radiation (03CH01-CB)
Spectrum Analyzer	R&S	FSP40	100056	9kHz ~ 40GHz	Nov. 22, 2016	Radiation (03CH01-CB)
EMI Test	R&S	ESCS	100355	9kHz ~ 2.75GHz	May 06, 2017	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	6.2009-10-7	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. 02, 2017	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)
RF Cable-high	Woken	RG402	High Cable-9	1 GHz –26.5 GHz	Oct. 24, 2016	Conducted (TH01-CB)

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FCC ID: UK7-NDW4A

# FCC Test Report

RF Cable-high	Woken	RG402	High Cable-10	1 GHz –26.5 GHz	Oct. 24, 2016	Conducted (TH01-CB)
Power Sensor	Agilent	U2021XA	MY53410001	50MHz~18GHz	Nov. 22, 2016	Conducted (TH01-CB)

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

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<sup>&</sup>quot;\*" Calibration Interval of instruments listed above is two years.



## EBW-DTS Result Appendix A

**Summary** 

Mode	Max-N dB	Max-OBW	ITU-Code	Min-N dB	Min-OBW
	(Hz)	(Hz)		(Hz)	(Hz)
BT-LE(1Mbps)	-	-	-	-	-
2.4-2.4835GHz	700k	1.074M	1M07F1D	687.5k	1.068M

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

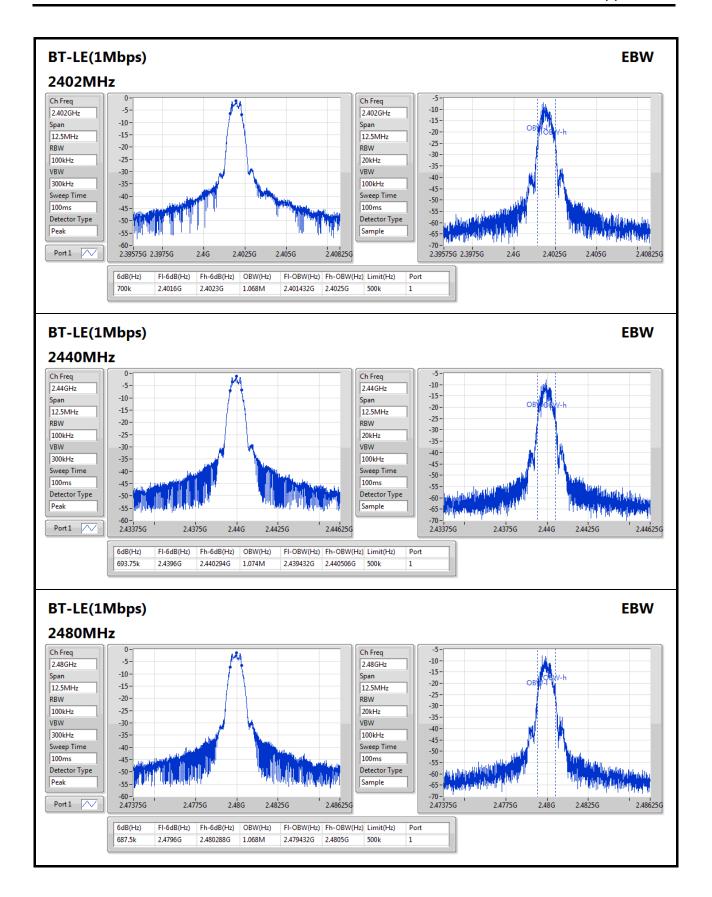
Mode	Result	Limit	Port 1-N dB	Port 1-OBW
		(Hz)	(Hz)	(Hz)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	500k	700k	1.068M
2440MHz	Pass	500k	693.75k	1.074M
2480MHz	Pass	500k	687.5k	1.068M

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

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PK Power Result Appendix B.1

**Summary** 

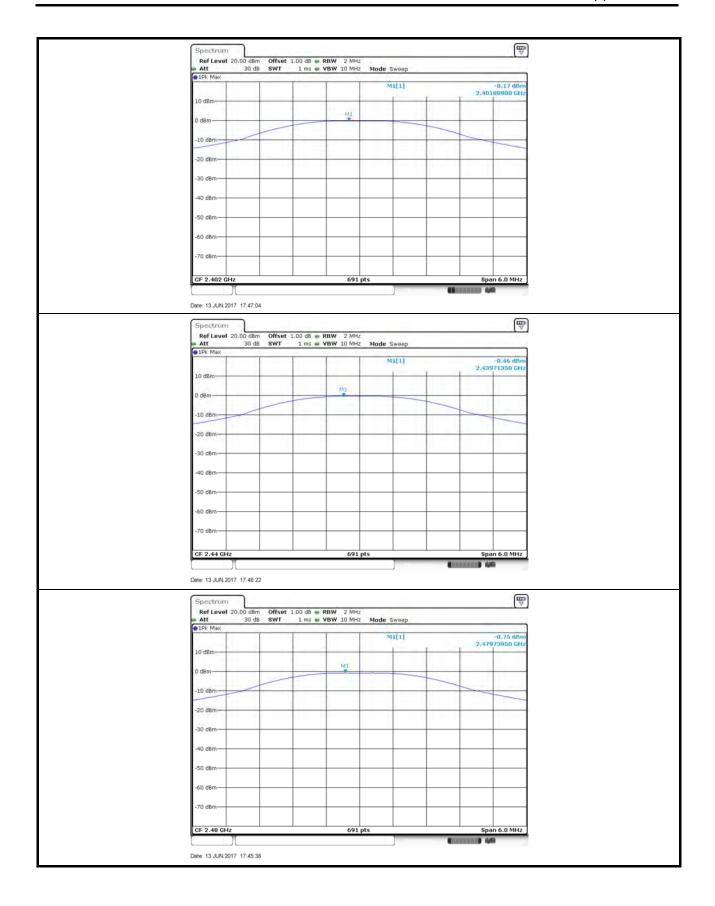
Mode	Power	Power
	(dBm)	(W)
BT-LE(1Mbps)	-	-
2.4-2.4835GHz	-0.17	0.00096

#### Result

Mode	Result	Gain	Power	Power Limit
		(dBi)	(dBm)	(dBm)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	-10	-0.17	30.00
2440MHz	Pass	-10	-0.46	30.00
2480MHz	Pass	-10	-0.75	30.00

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## **AV Power-DTS Result**

Appendix B.2

**Summary** 

Mode	Power	Power
	(dBm)	(W)
BT-LE(1Mbps)	-	-
2.4-2.4835GHz	-2.86	0.00052

#### Result

Mode	Result	Gain	Power	Power Limit
		(dBi)	(dBm)	(dBm)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	-10.00	-2.86	30.00
2440MHz	Pass	-10.00	-3.25	30.00
2480MHz	Pass	-10.00	-3.31	30.00

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# PSD-DTS Result Appendix C

**Summary** 

Mode	PD
	(dBm/RBW)
BT-LE(1Mbps)	-
2.4-2.4835GHz	-16.36

RBW=3kHz.

#### Result

Mode	Result	Gain	PD	PD Limit
		(dBi)	(dBm/RBW)	(dBm/RBW)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	-10.00	-17.14	8.00
2440MHz	Pass	-10.00	-16.36	8.00
2480MHz	Pass	-10.00	-18.08	8.00

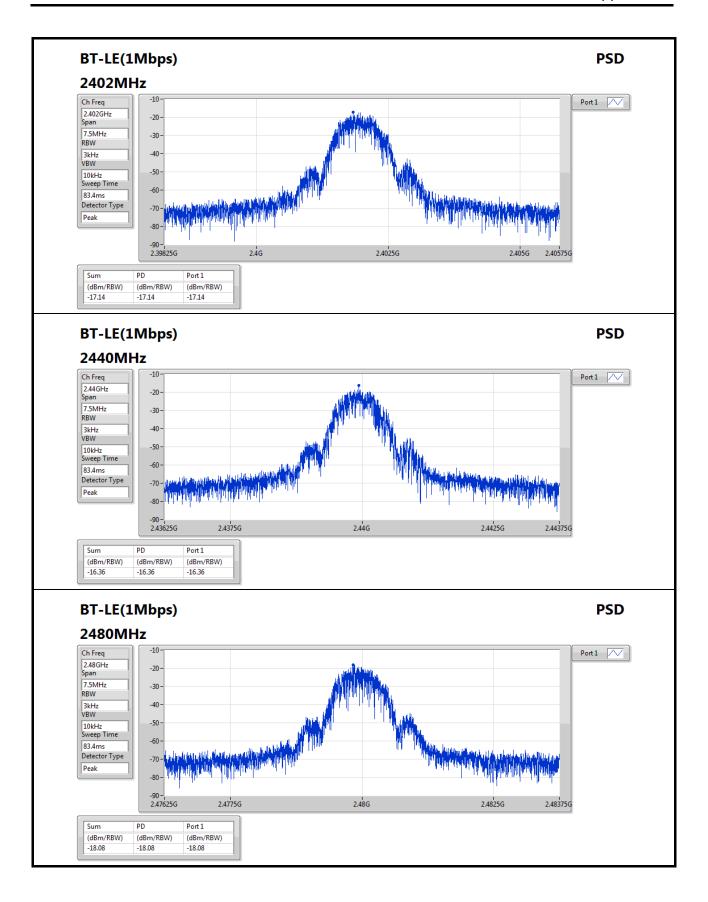
RBW=3kHz.

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## **CSE Non-restricted Band-DTS Result**

Appendix D

**Summary** 

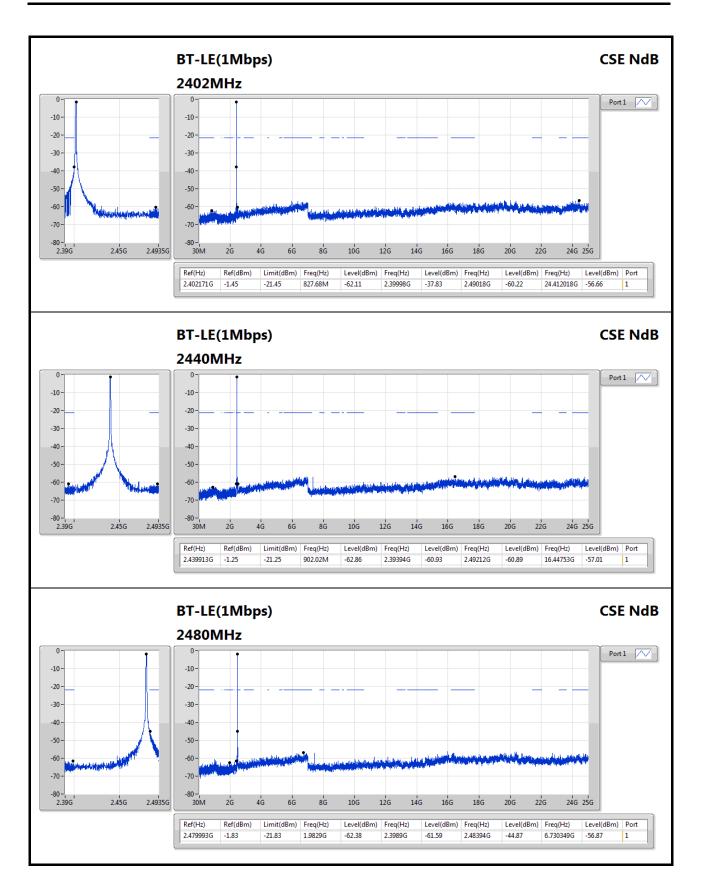
Mode	Result	Ref (Hz)	Ref (dBm)	Limit (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Port
BT-LE(1Mbps)	-	-	- (ubili)	- (ubiii)	-	- (ubili)	-	- (ubili)	-	- (ubili)	- (112)	- (ubili)	-
2.4-2.4835GHz	Pass	2.402171G	-1.45	-21.45	827.68M	-62.11	2.39998G	-37.83	2.49018G	-60.22	24.412018G	-56.66	1

#### Result

 rtoduit													
Mode	Result	Ref	Ref	Limit	Freq	Level	Freq	Level	Freq	Level	Freq	Level	Port
		(Hz)	(dBm)	(dBm)	(Hz)	(dBm)	(Hz)	(dBm)	(Hz)	(dBm)	(Hz)	(dBm)	
BT-LE(1Mbps)	-	-	-	-	-	-	-	-	-	-	-	-	-
2402MHz	Pass	2.402171G	-1.45	-21.45	827.68M	-62.11	2.39998G	-37.83	2.49018G	-60.22	24.412018G	-56.66	1
2440MHz	Pass	2.439913G	-1.25	-21.25	902.02M	-62.86	2.39394G	-60.93	2.49212G	-60.89	16.44753G	-57.01	1
2480MHz	Pass	2.479993G	-1.83	-21.83	1.9829G	-62.38	2.3989G	-61.59	2.48394G	-44.87	6.730349G	-56.87	1

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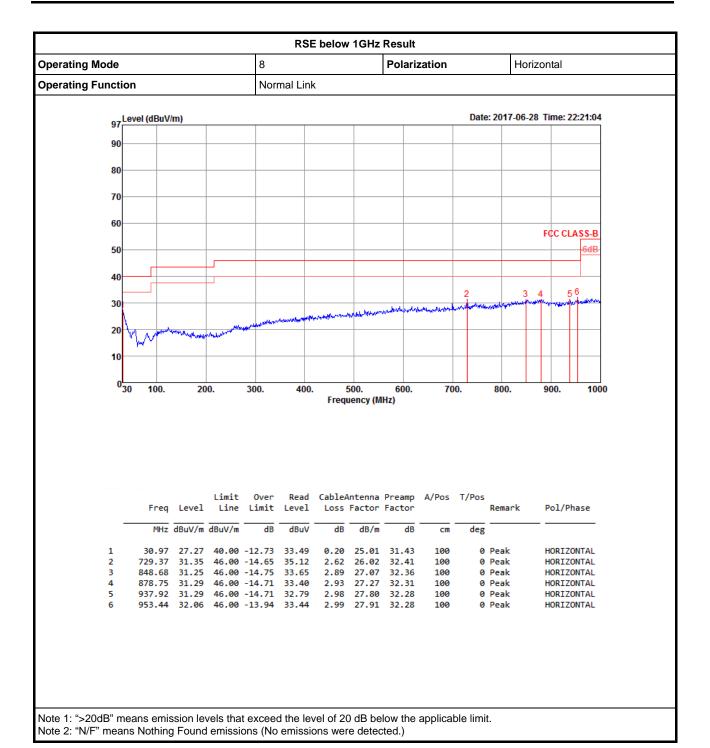




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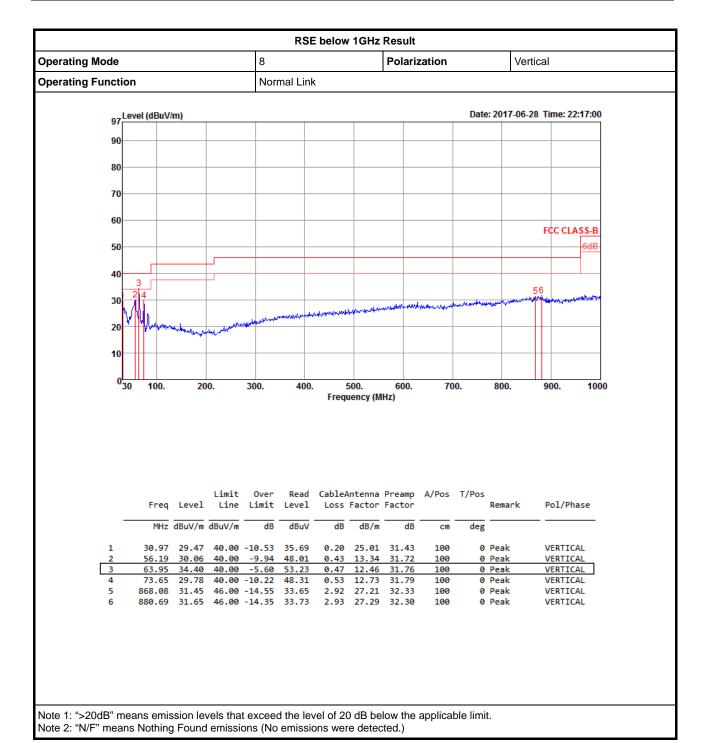
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## RSE TX above 1GHz Result

Appendix E.2

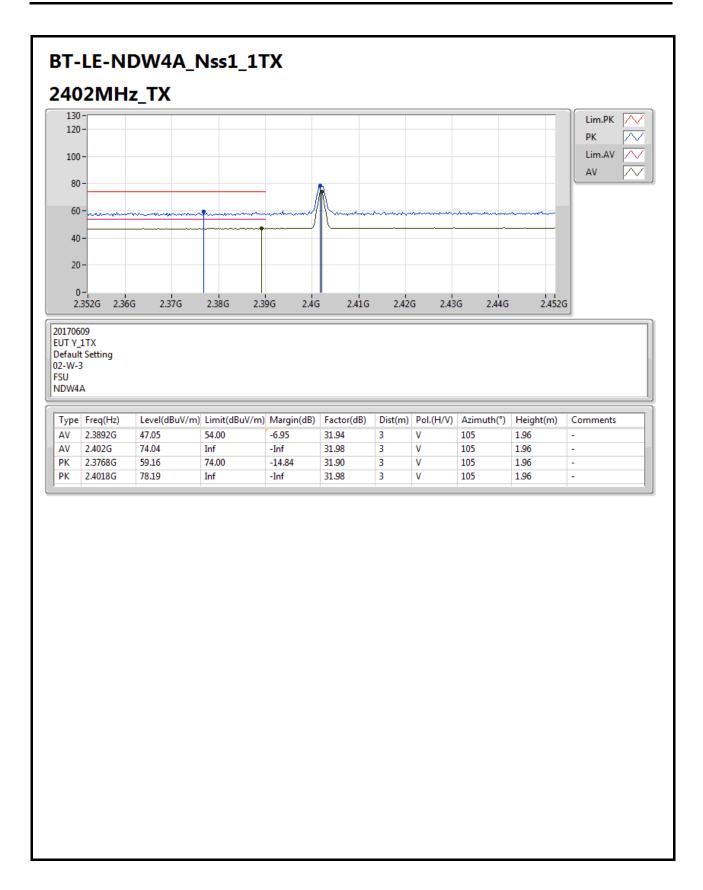
Test Mode: Mode 1

**Summary** 

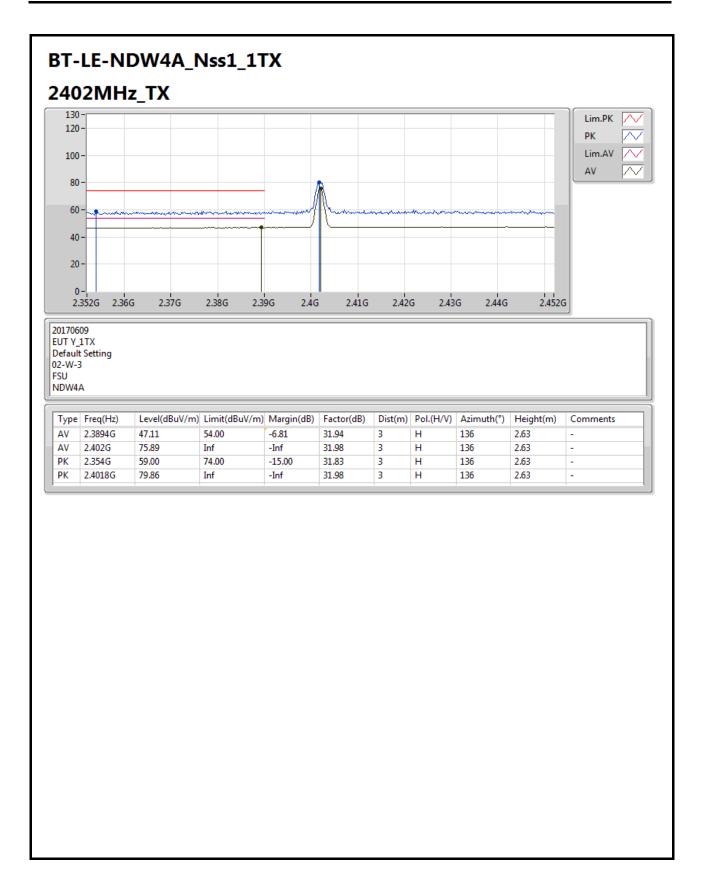
Mode	Result	Туре	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Pol. (H/V)	Azimuth	Height (m)	Comments
BT-LE-NDW4A_Nss1_1TX	-	-	-	-	-	-		-	-	-	-	-
2.4-2.4835GHz	Pass	AV	2.4958G	47.82	54.00	-6.18	32.26	3	Н	42	1.71	-

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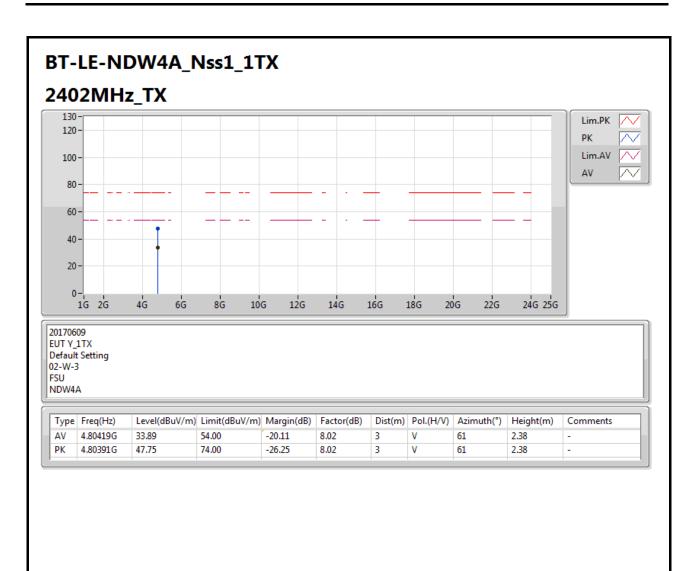




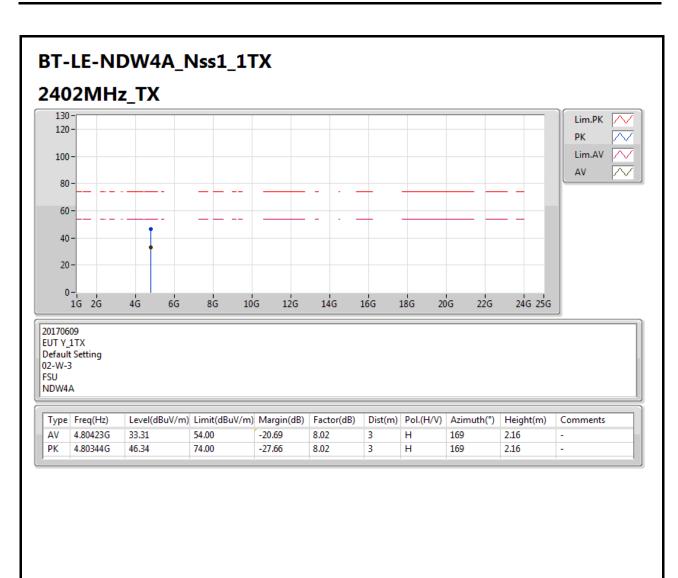






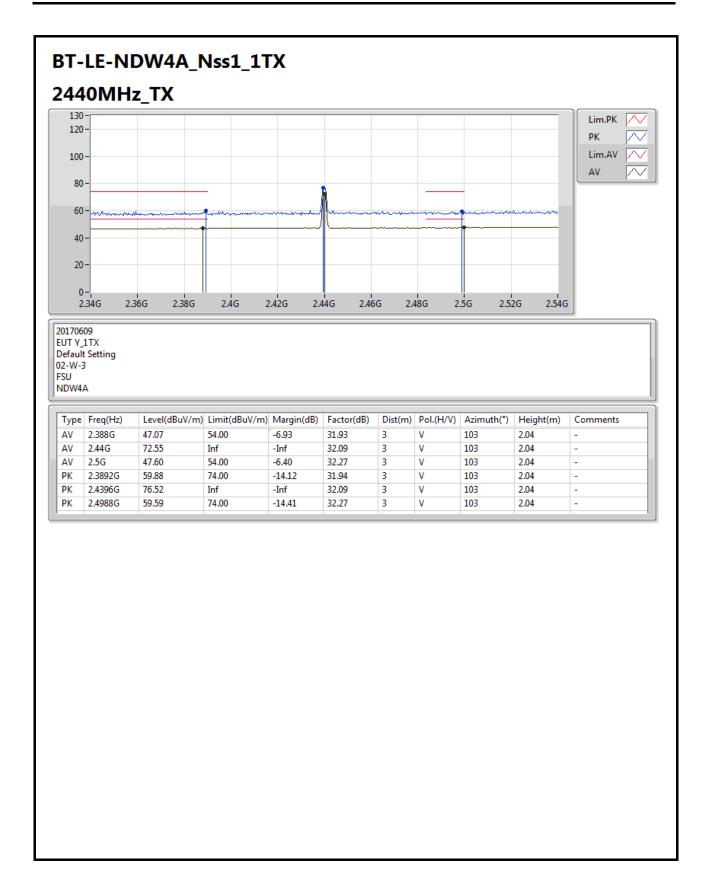




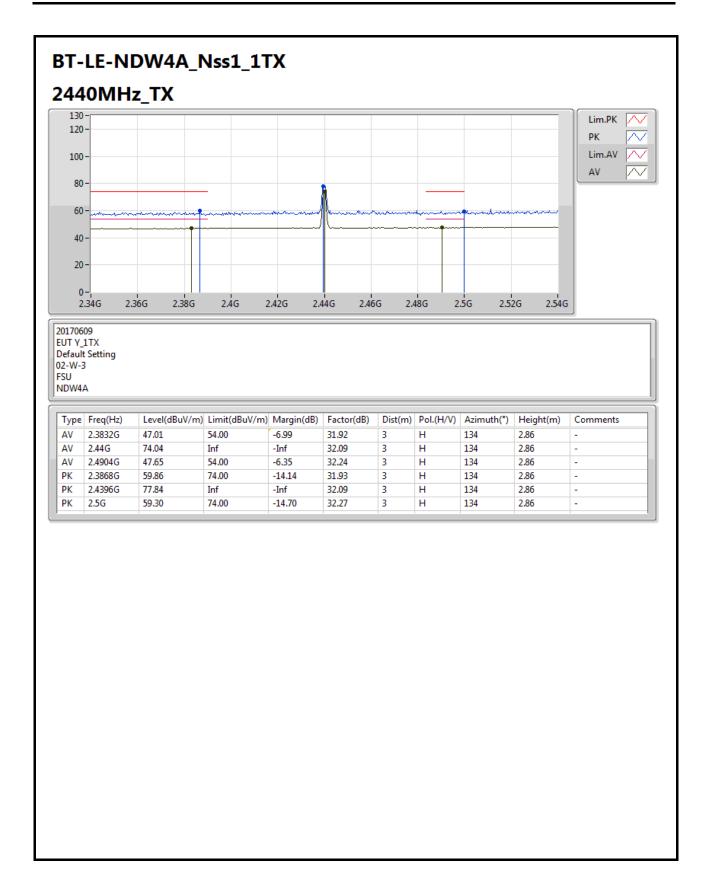


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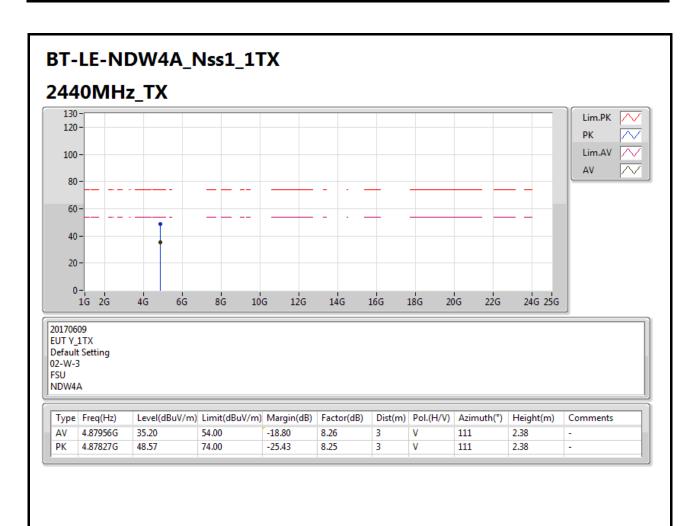




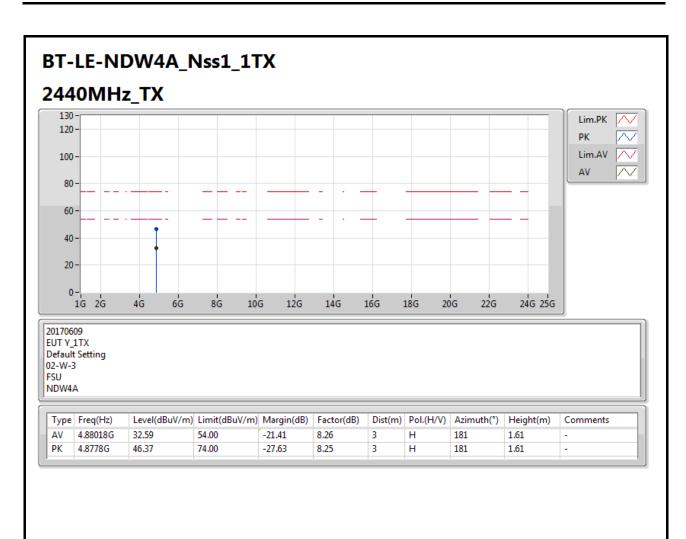




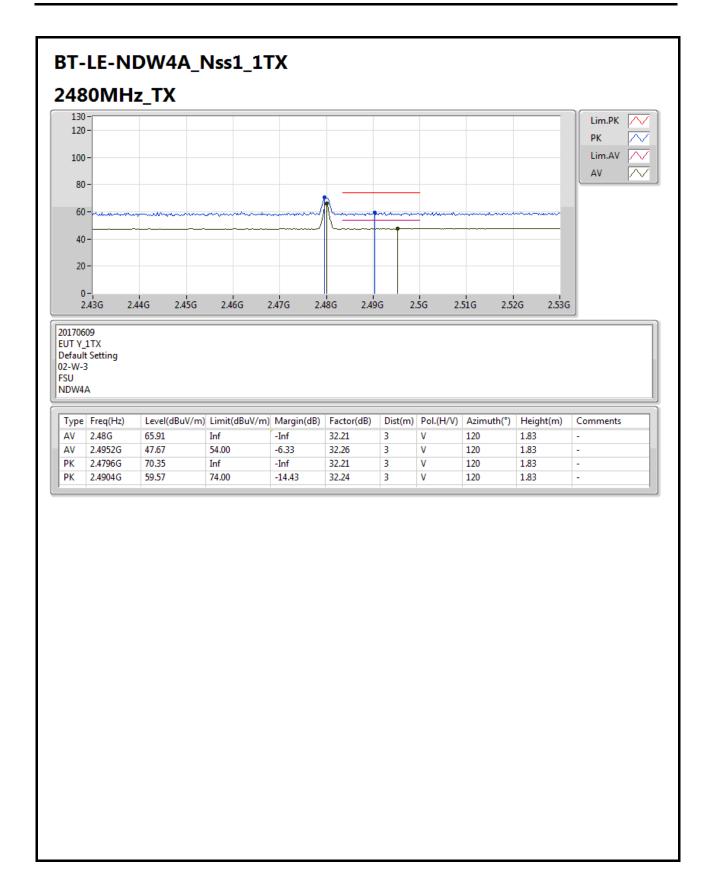




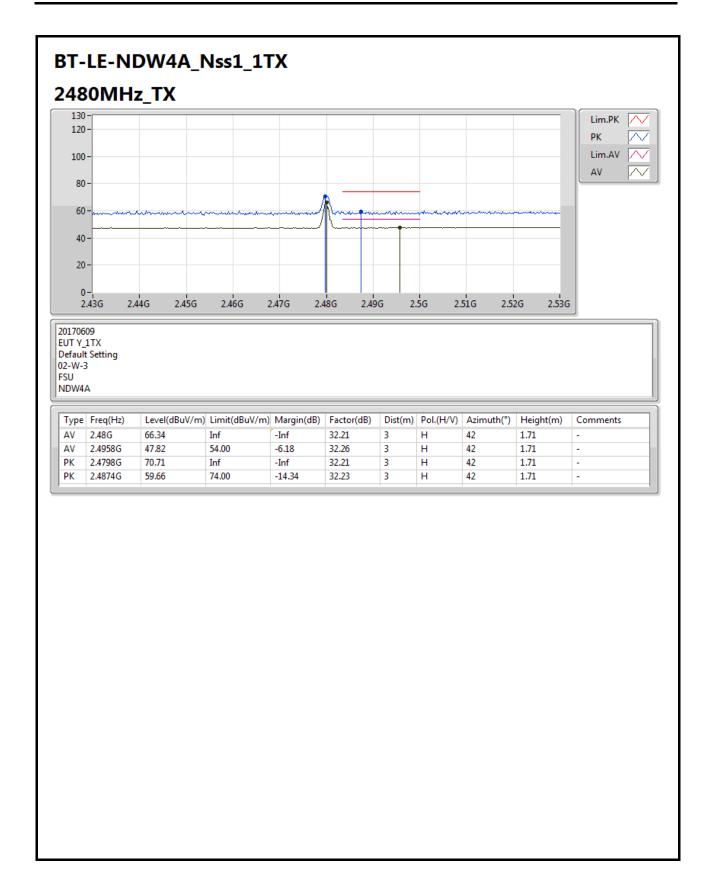




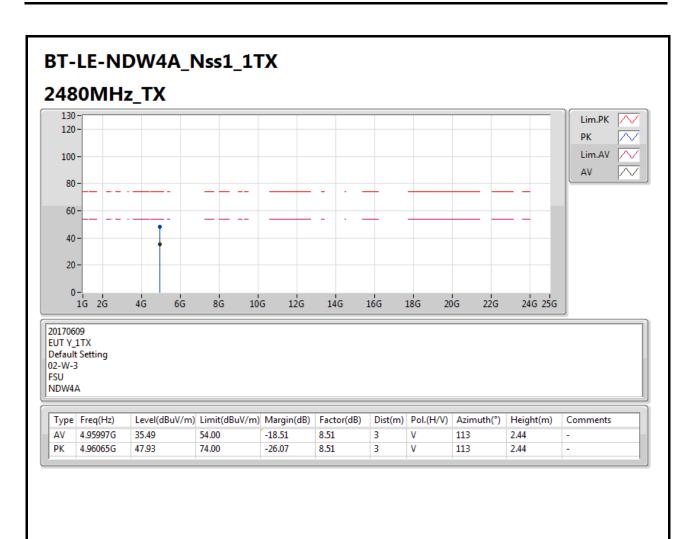




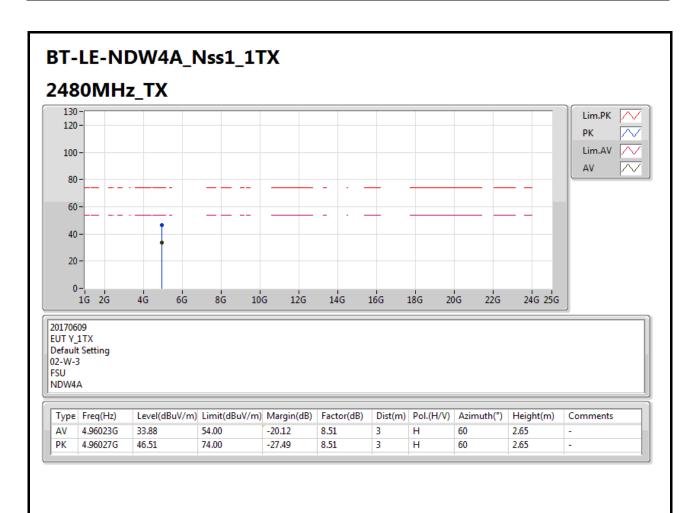














## RSE TX above 1GHz Result

Appendix E.2

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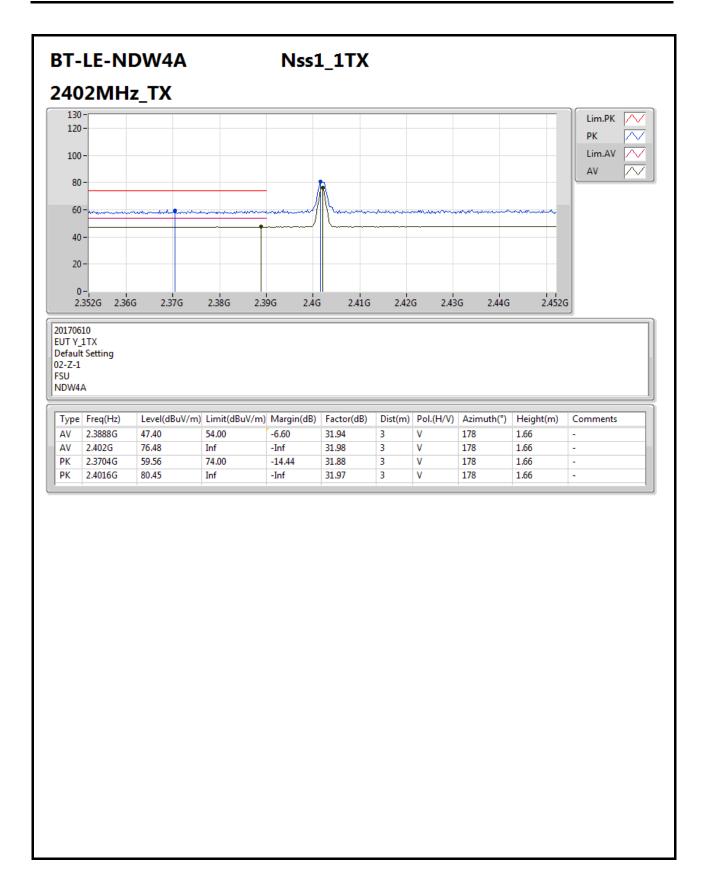
Test Mode: Mode 2

**Summary** 

Mode	Result	Туре	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Pol. (H/V)	Azimuth	Height (m)	Comments
BT-LE-NDW4A Metallic Watch Band_Nss1_1TX	-	-	-	-	-	-	-	-	-	-	-	-
2.4-2.4835GHz	Pass	AV	2.489G	48.13	54.00	-5.87	32.24	3	٧	119	2.06	-

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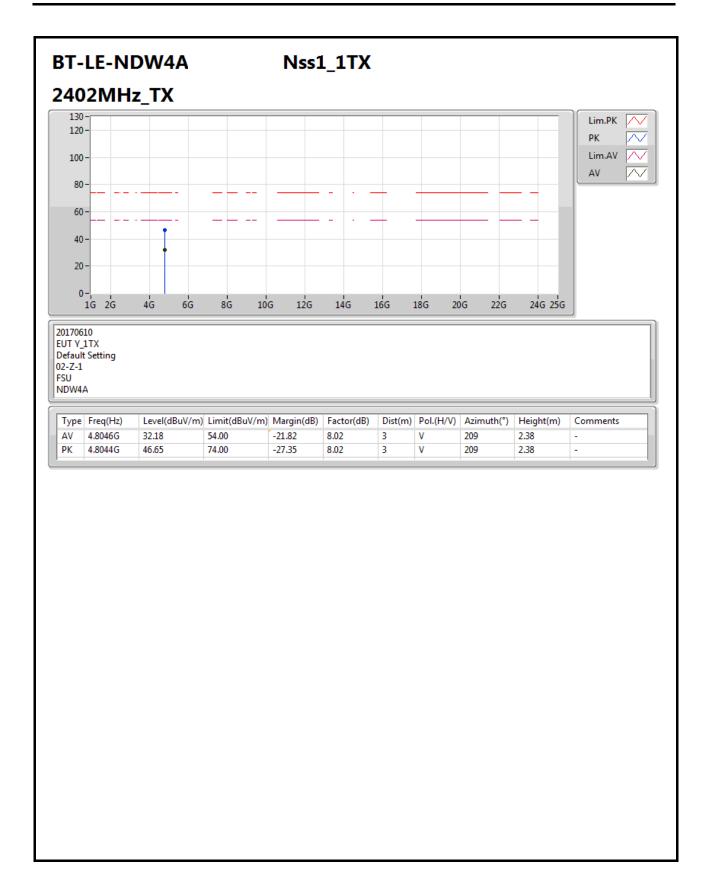




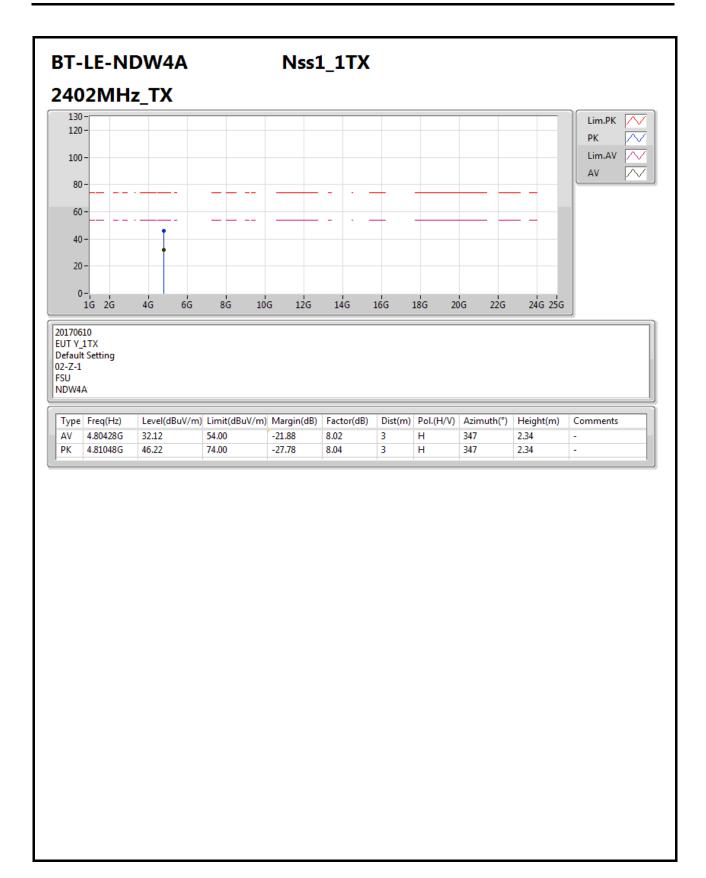




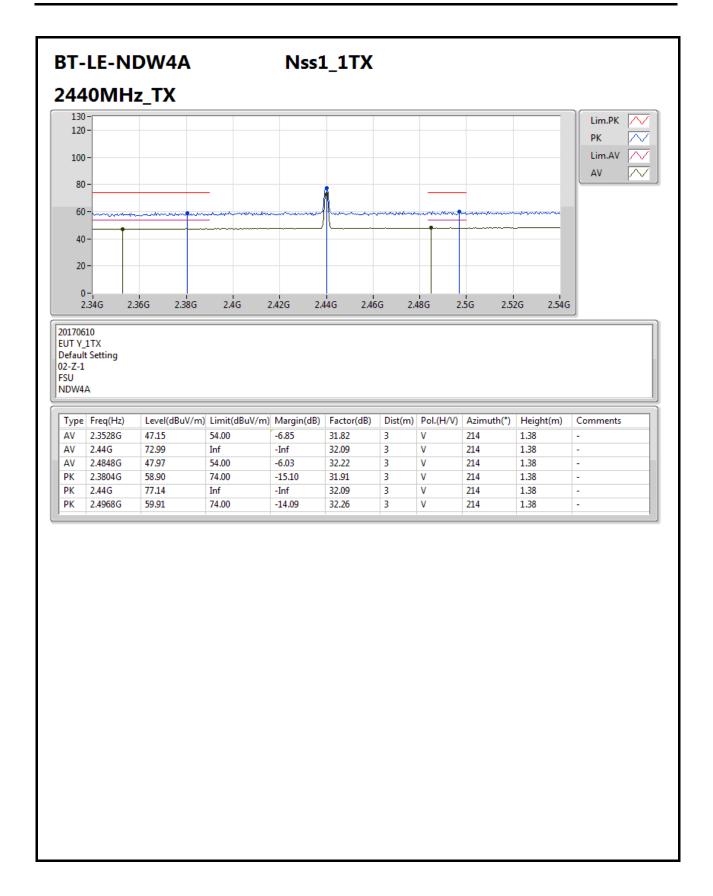




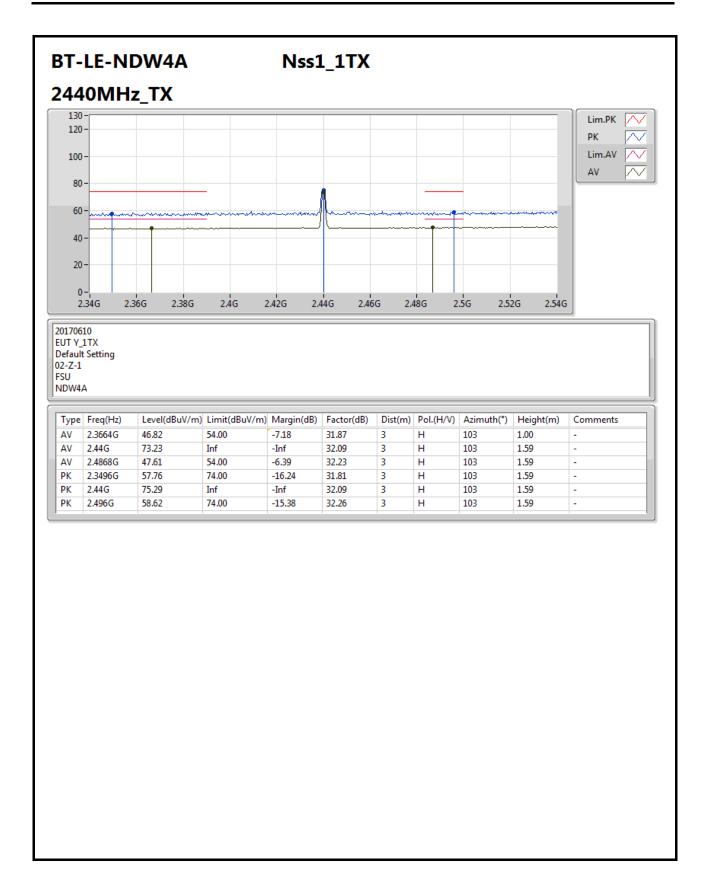






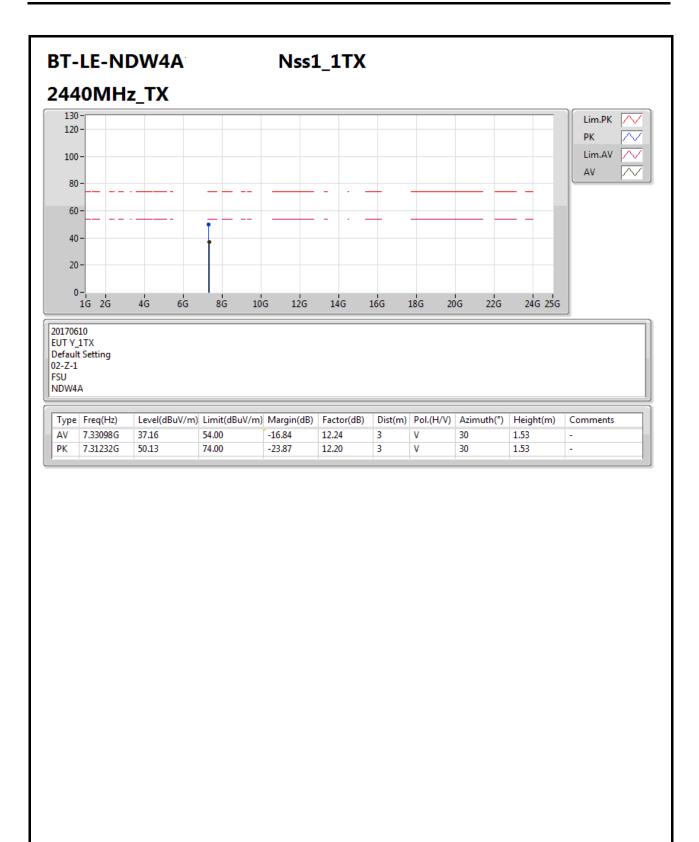




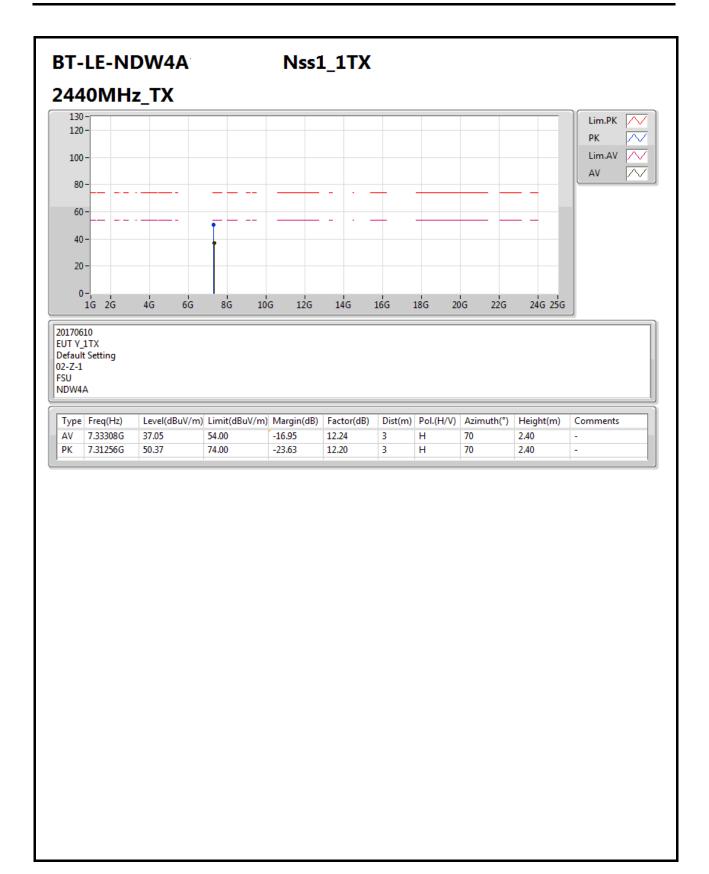


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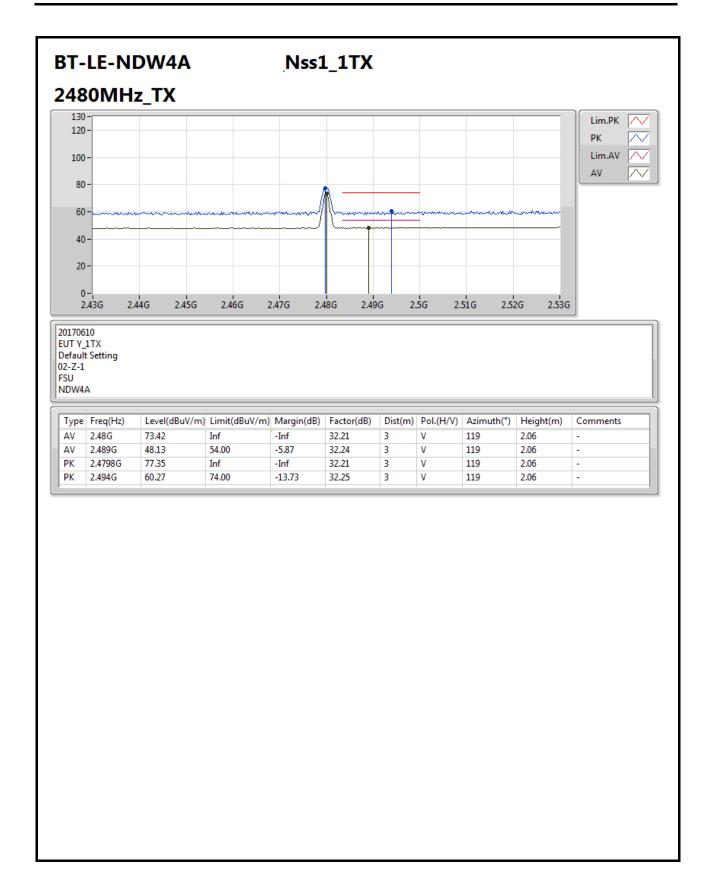




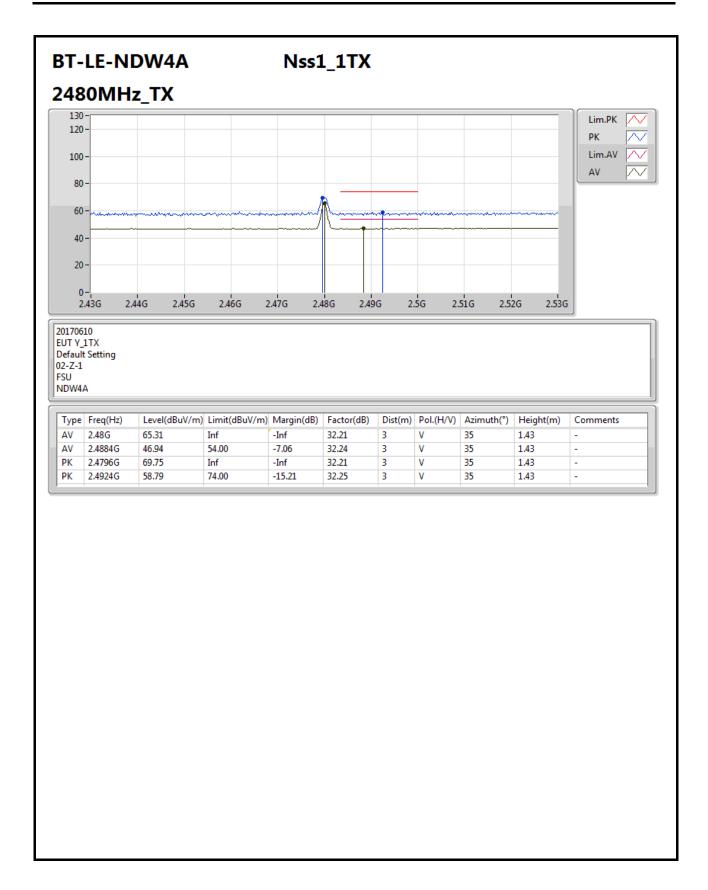




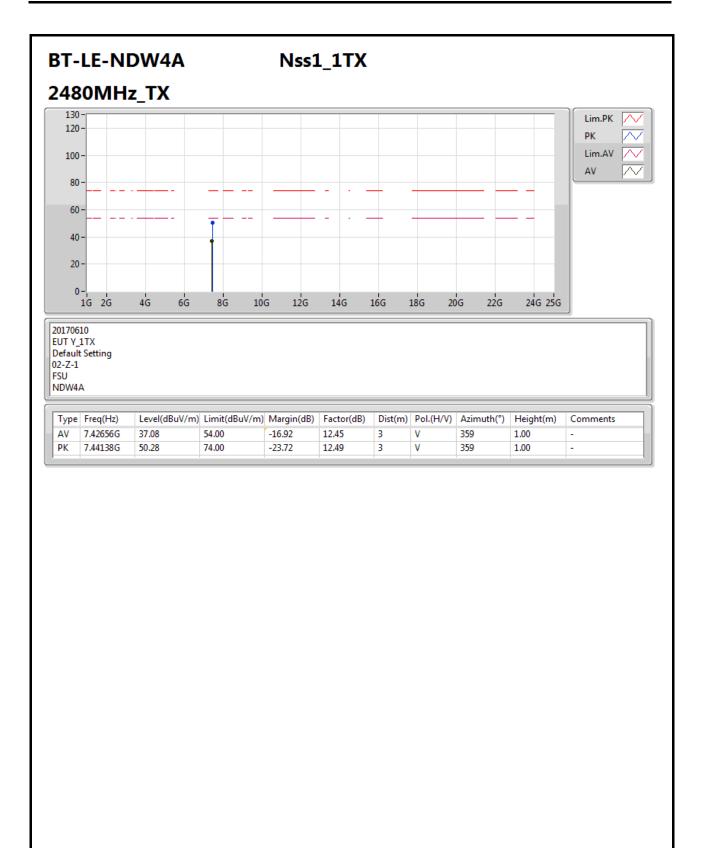




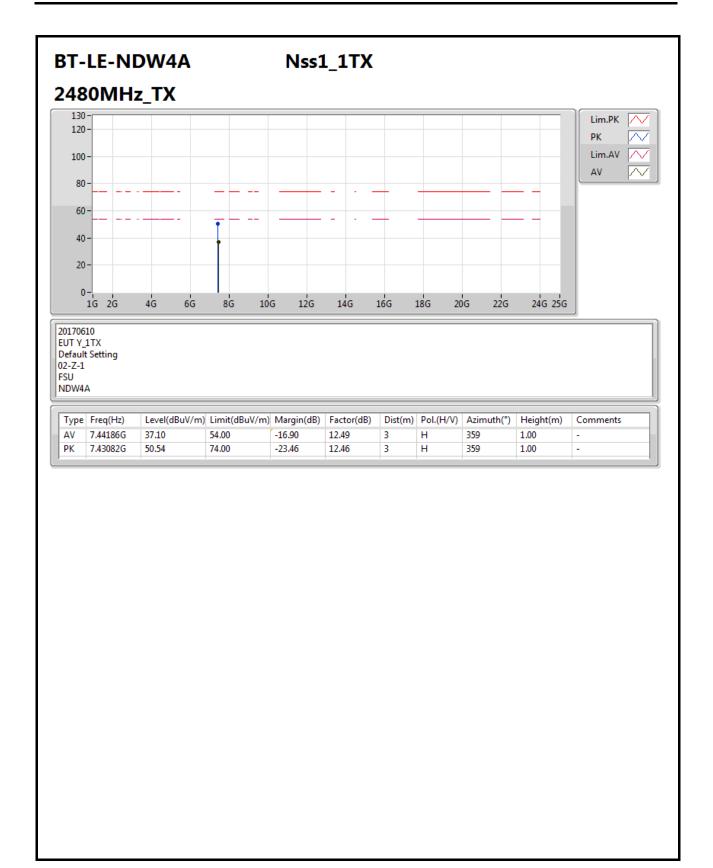














## RSE TX above 1GHz Result

Appendix E.2

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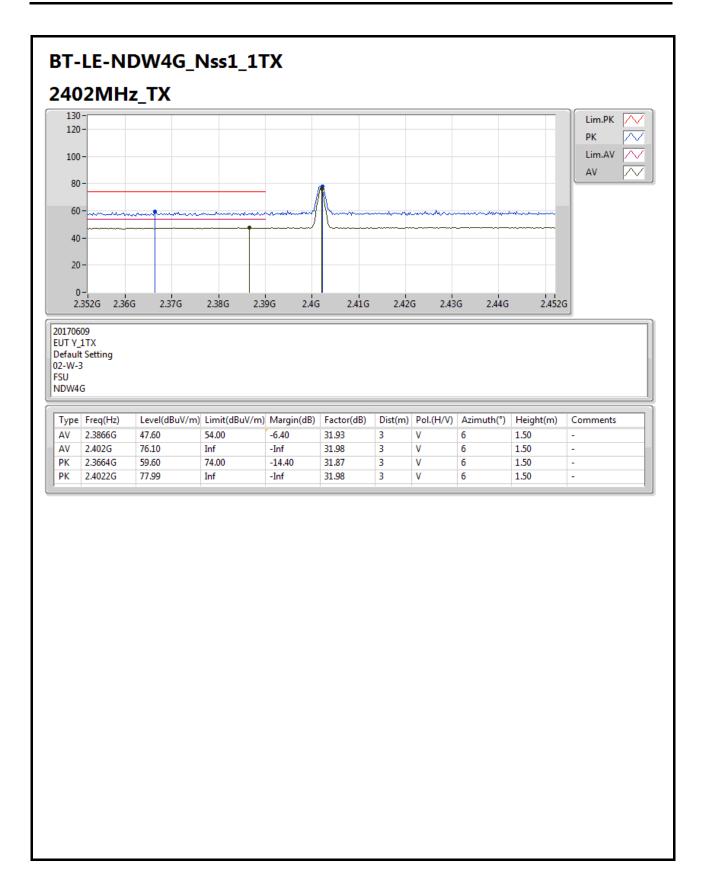
**Test Mode: Mode 3** 

Summary

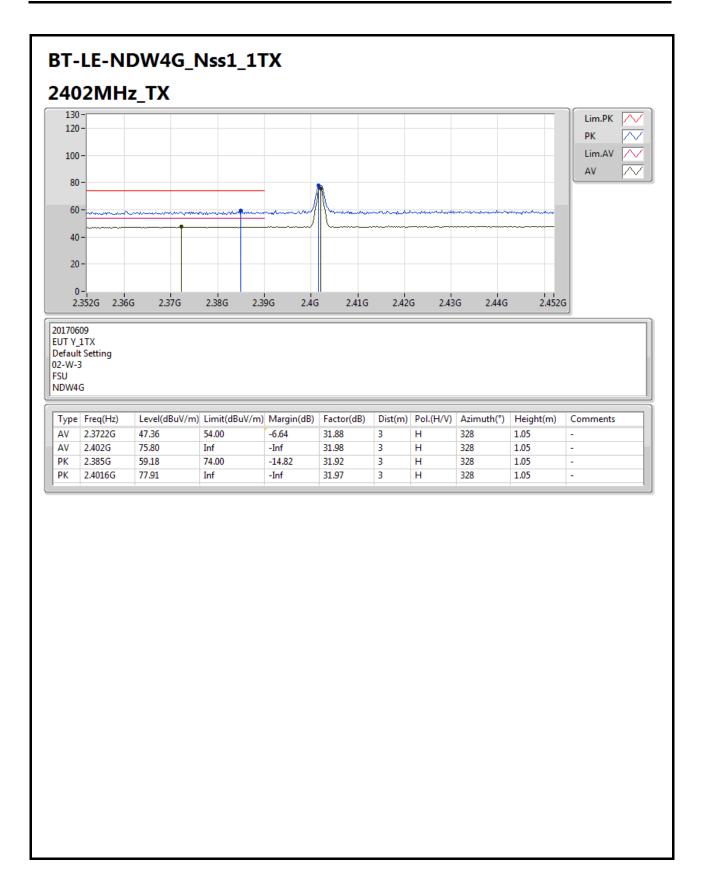
Mode	Result	Туре	Freq	Level	Limit	Margin	Factor	Dist	Pol.	Azimuth	Height	Comments
			(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)	(H/V)	(°)	(m)	
BT-LE-NDW4G_Nss1_1TX	-	-	-	-	-	-	-	-		-		-
2.4-2.4835GHz	Pass	AV	2.4996G	48.22	54.00	-5.78	32.27	3	Н	198	1.29	-

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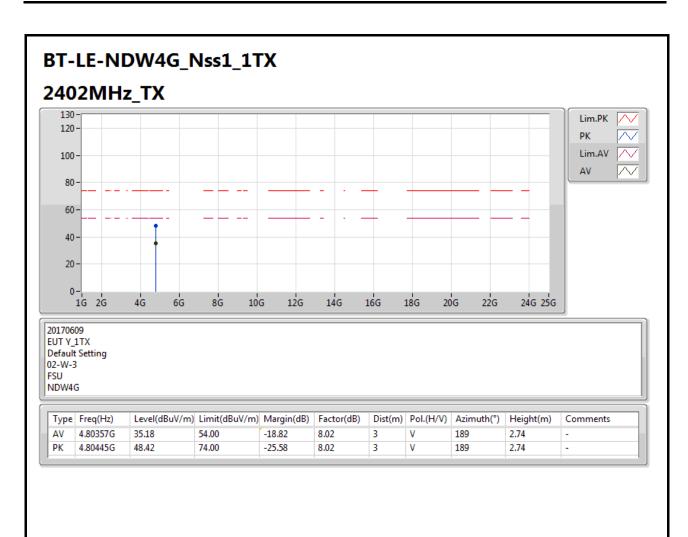




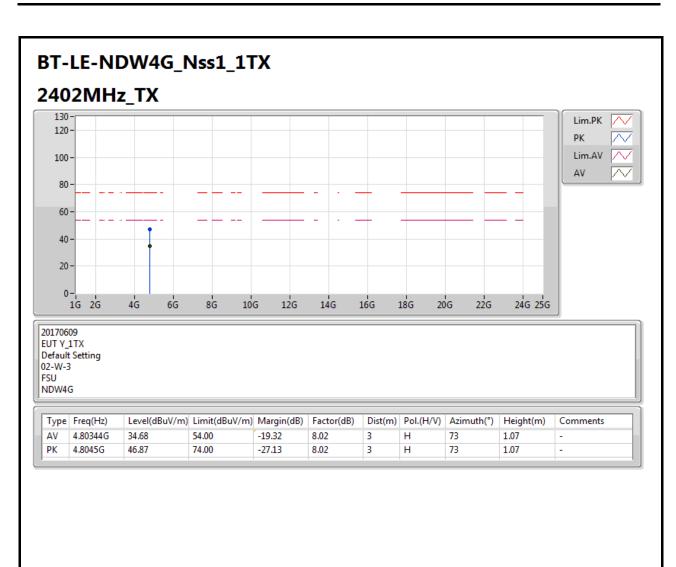




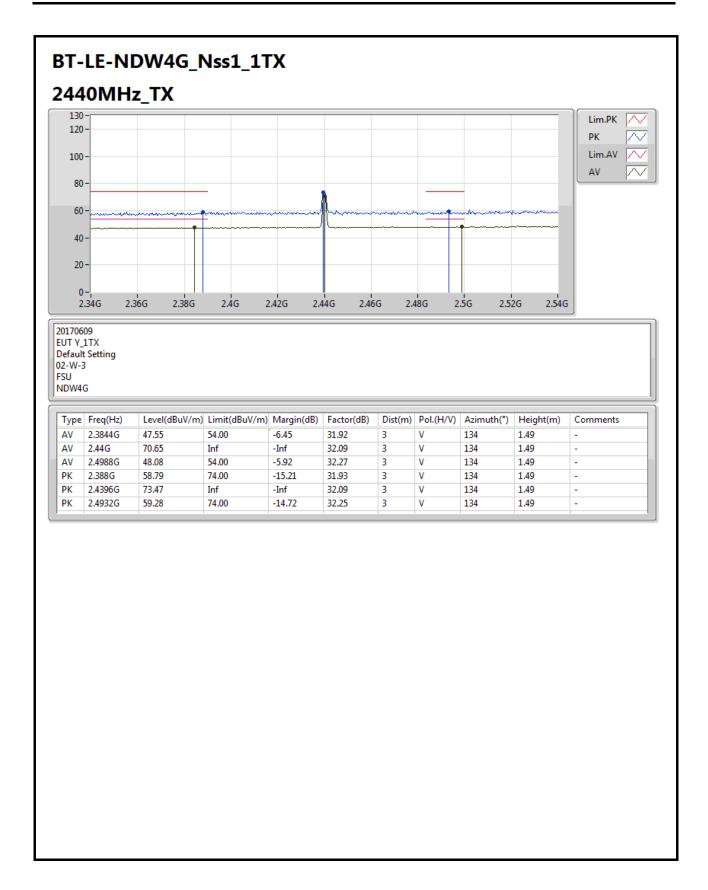






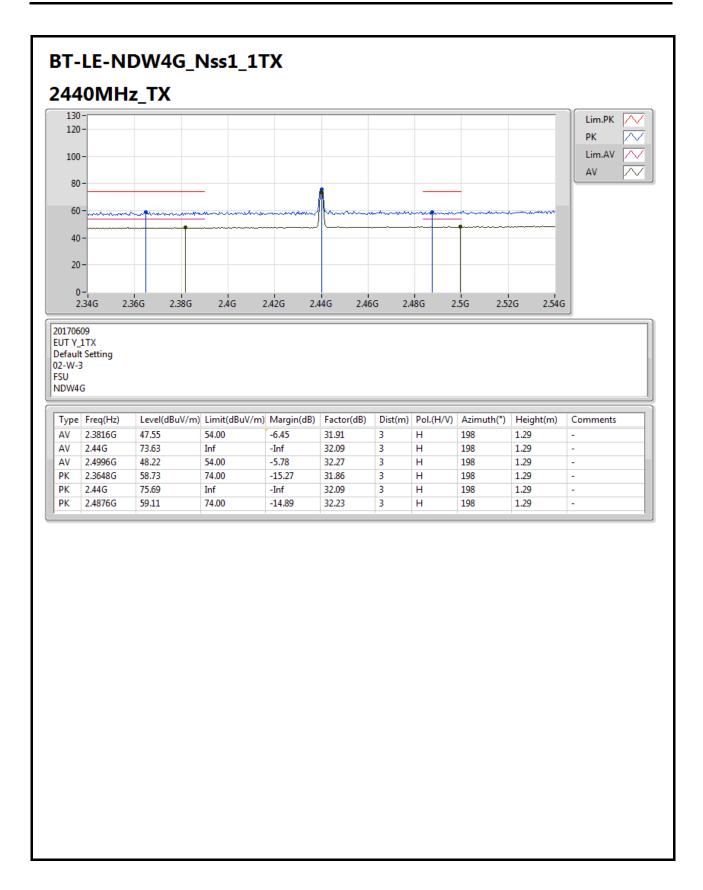




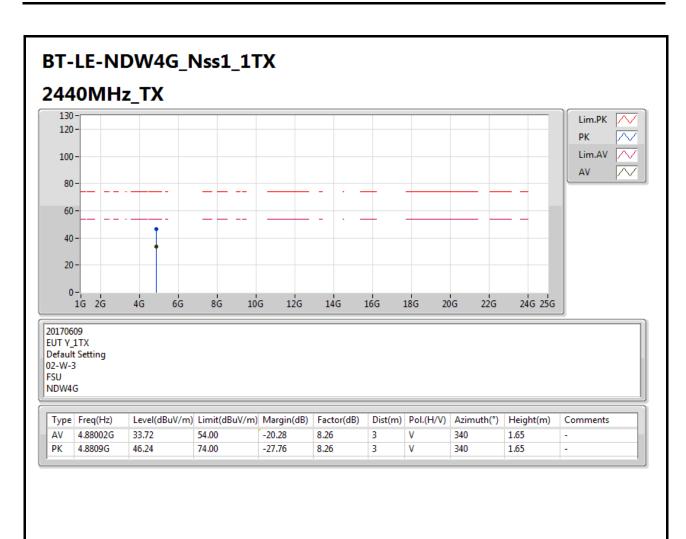


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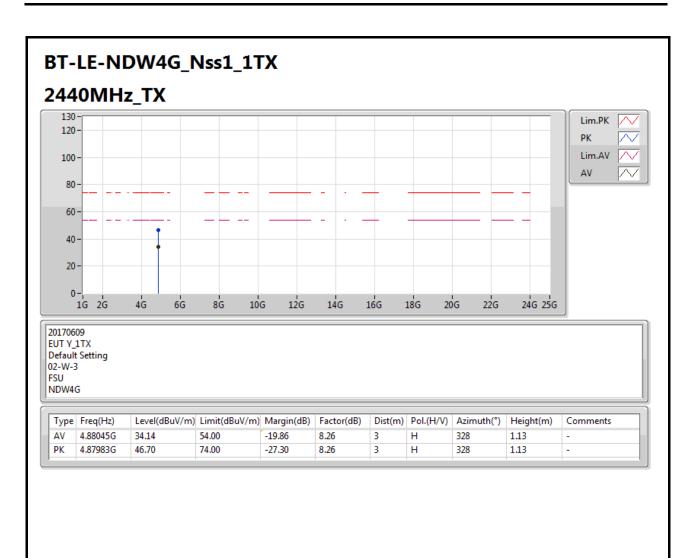




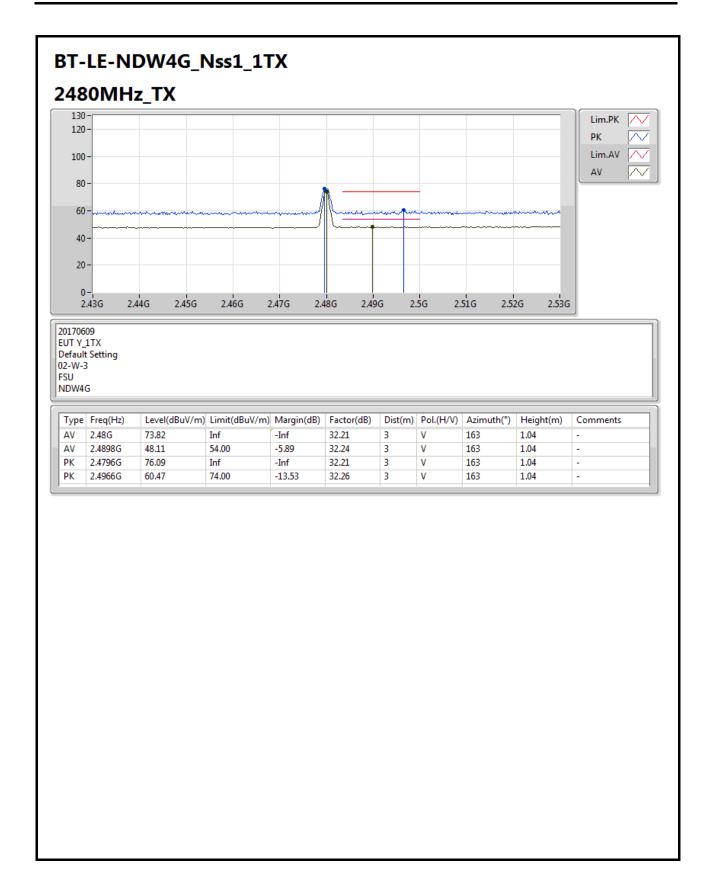




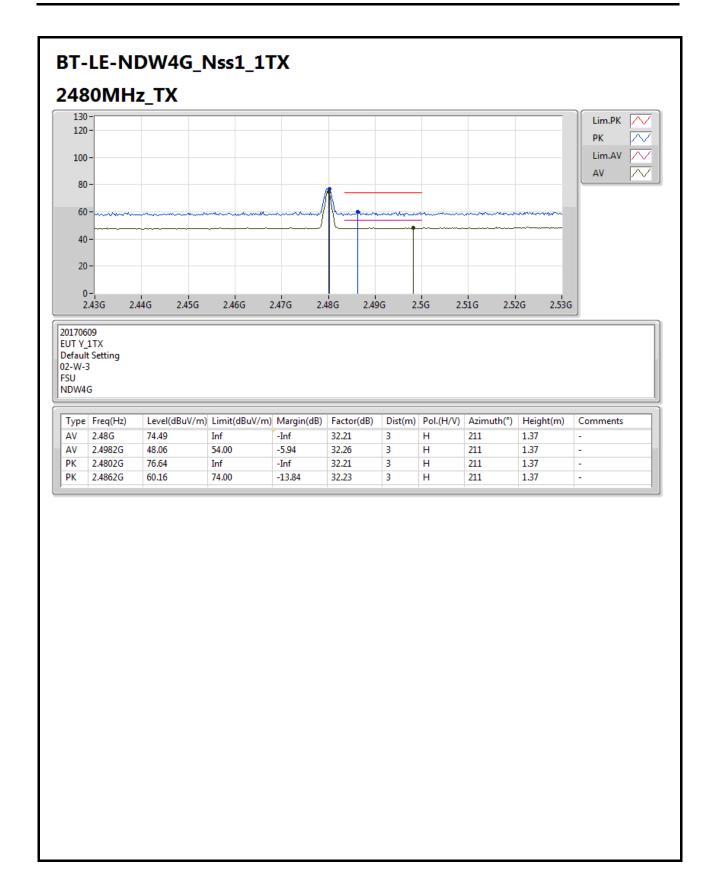




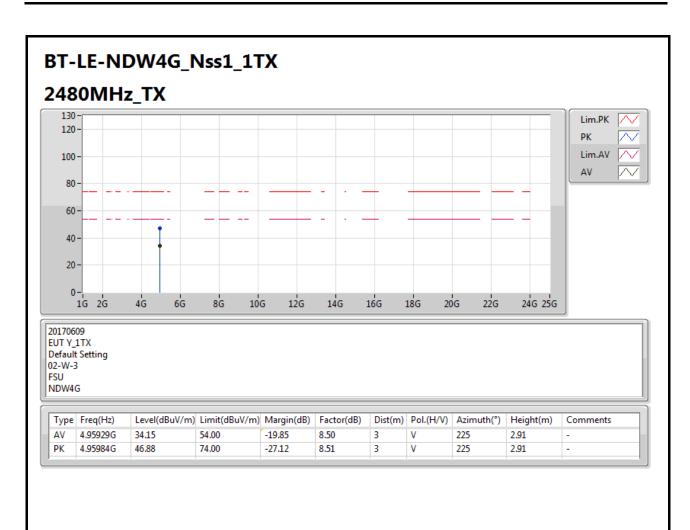




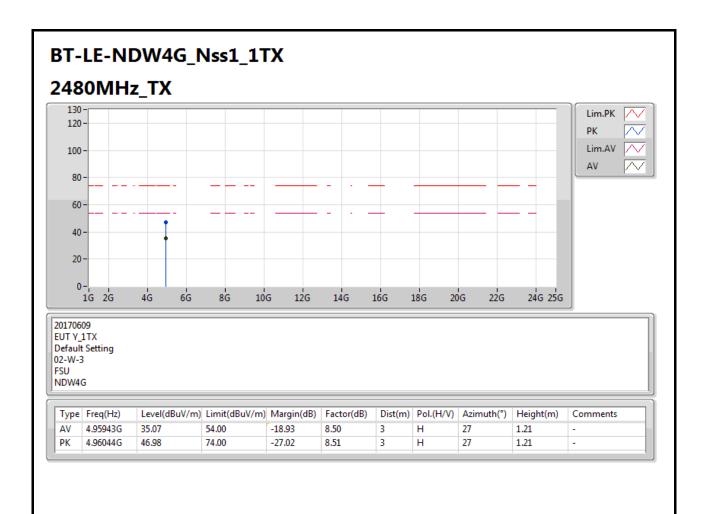














## RSE TX above 1GHz Result

Appendix E.2

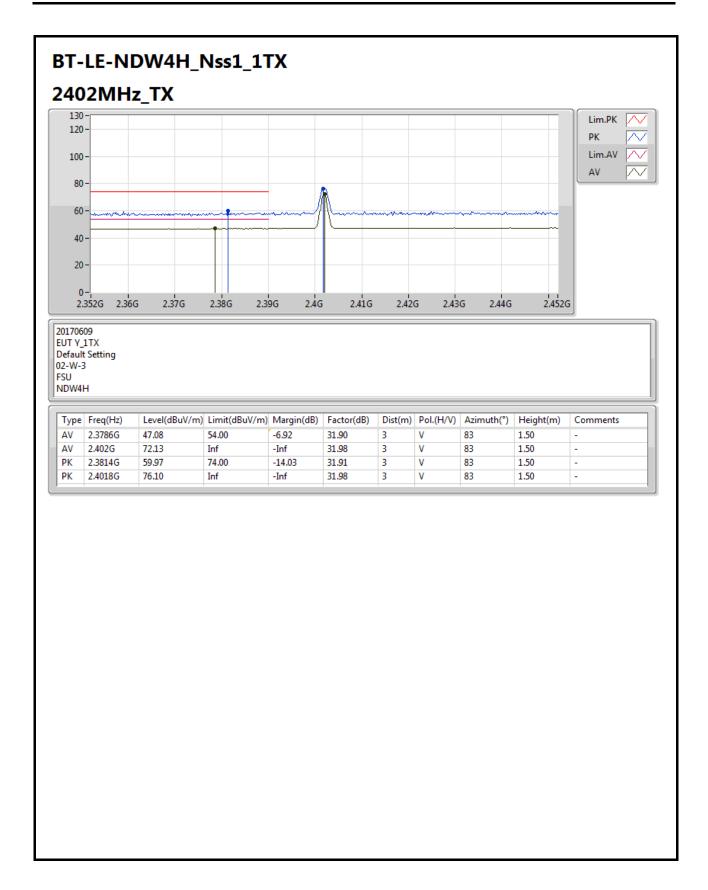
**Test Mode: Mode 4** 

Summary

Mode	Result	Туре	Freq	Level	Limit	Margin	Factor	Dist	Pol.	Azimuth	Height	Comments
			(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)	(H/V)	(°)	(m)	
BT-LE-NDW4H_Nss1_1TX	-	-	-	-	-	-	-	-	-	-	-	-
2.4-2.4835GHz	Pass	AV	2.4876G	47.67	54.00	-6.33	32.23	3	Н	167	1.06	-

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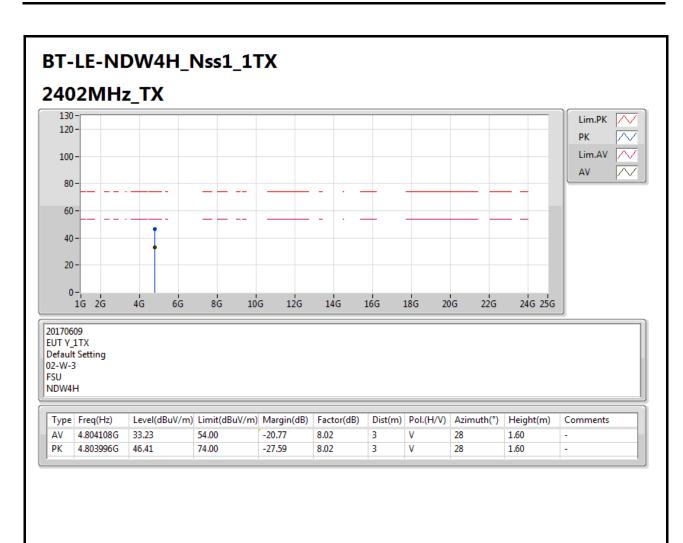




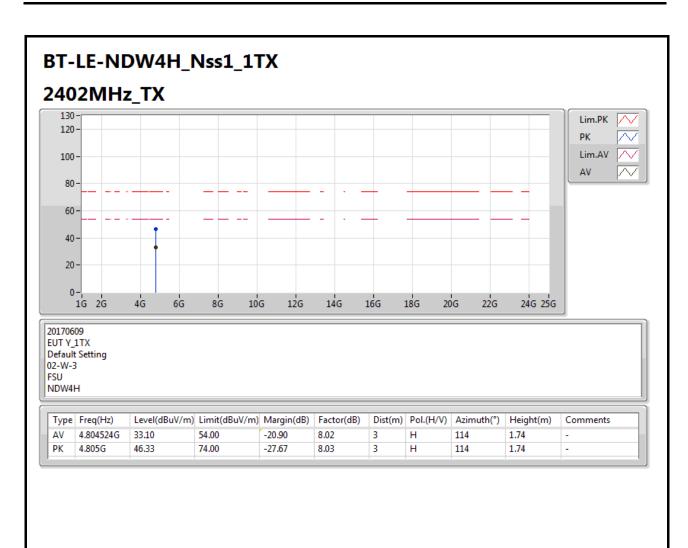




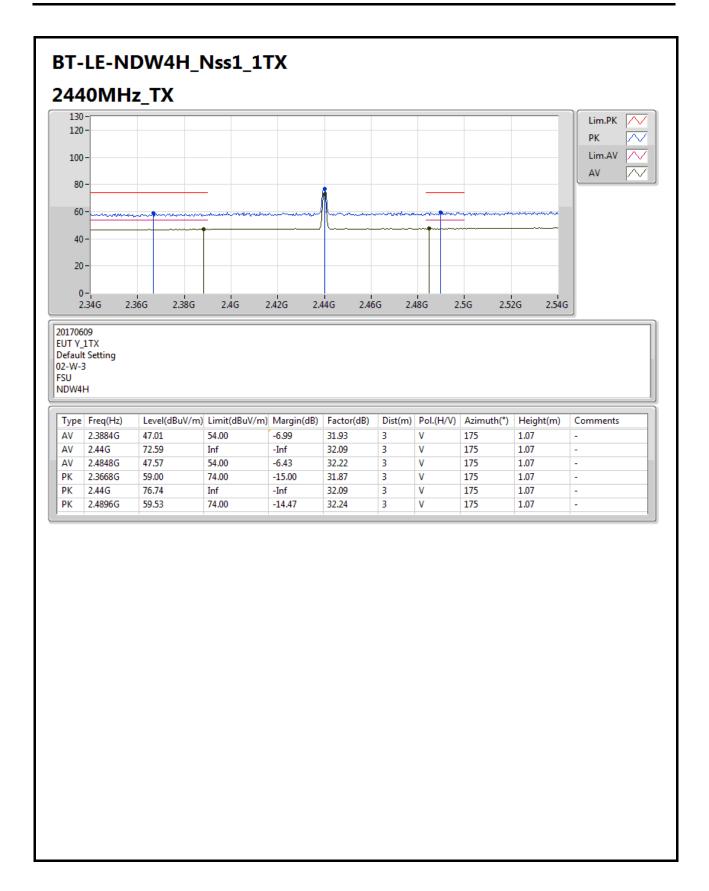




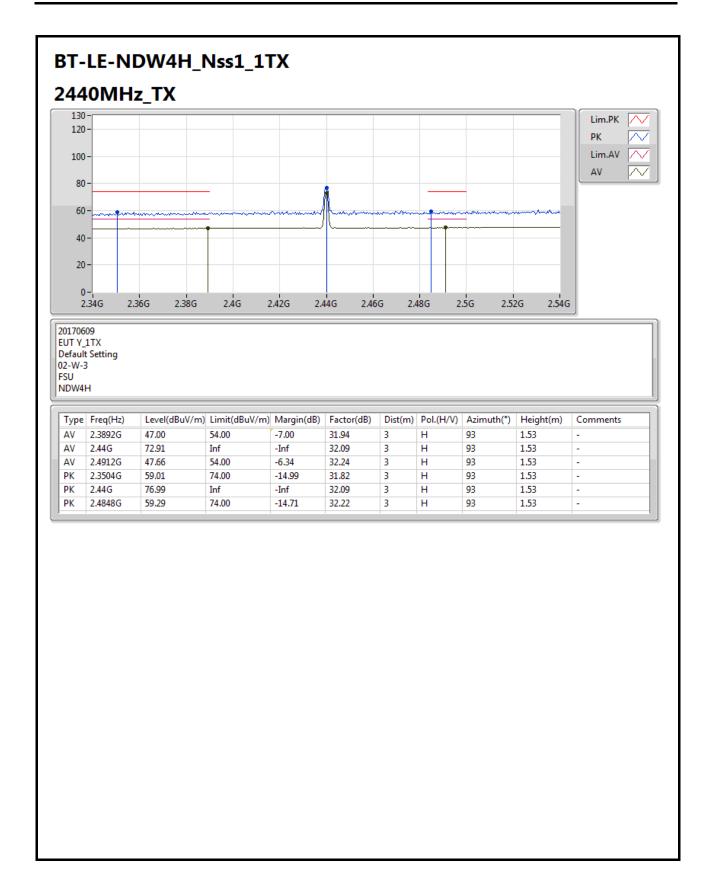




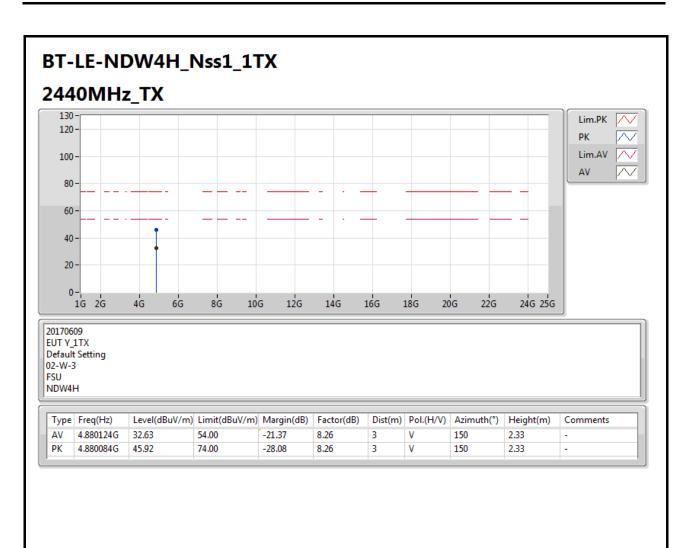




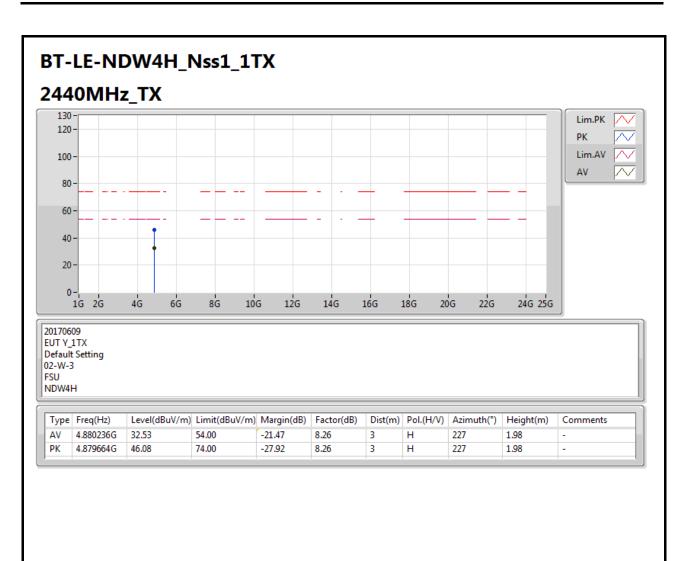




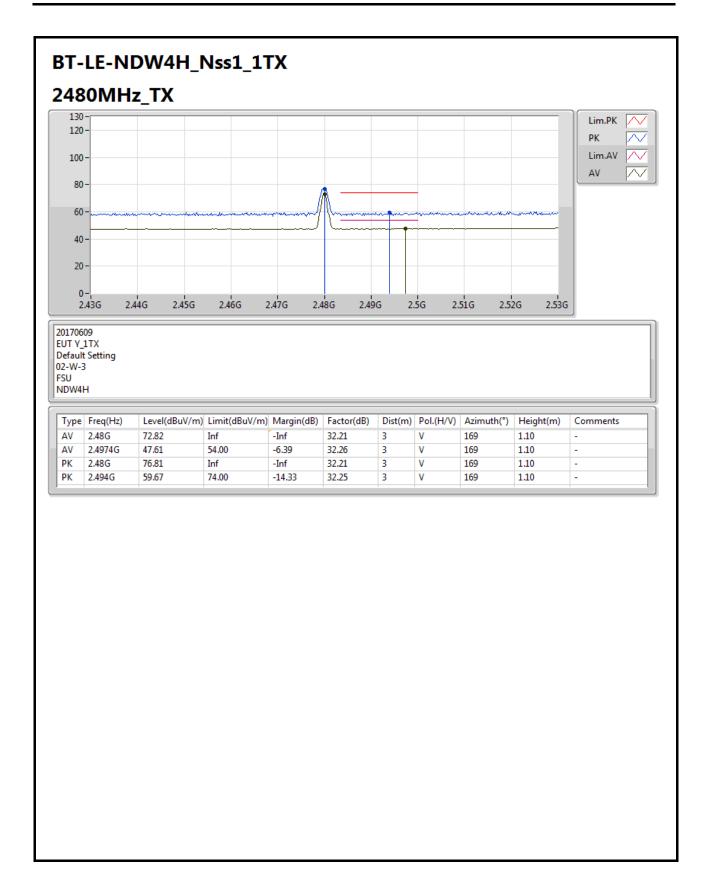




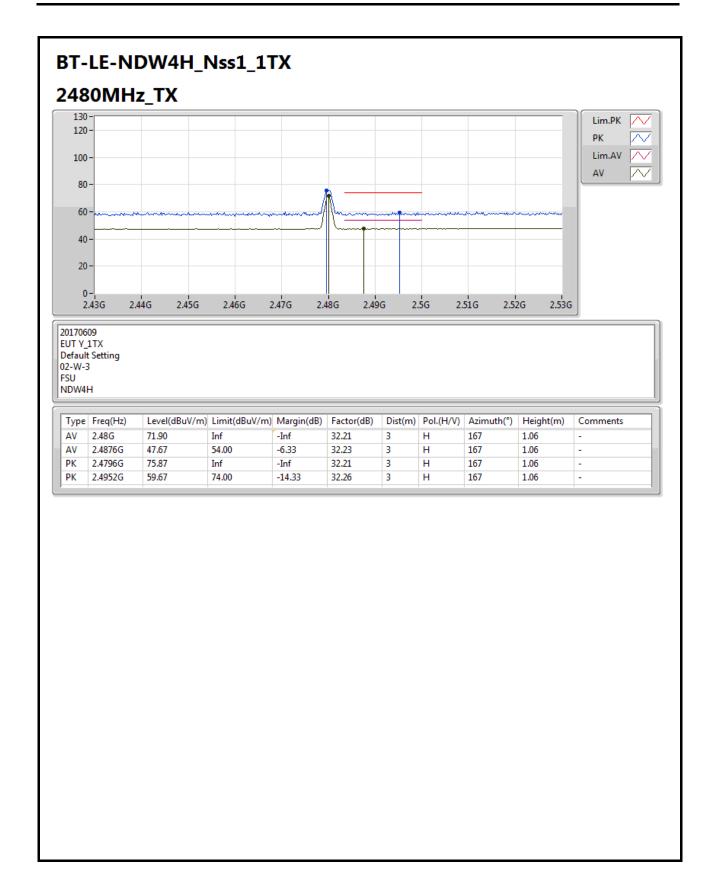




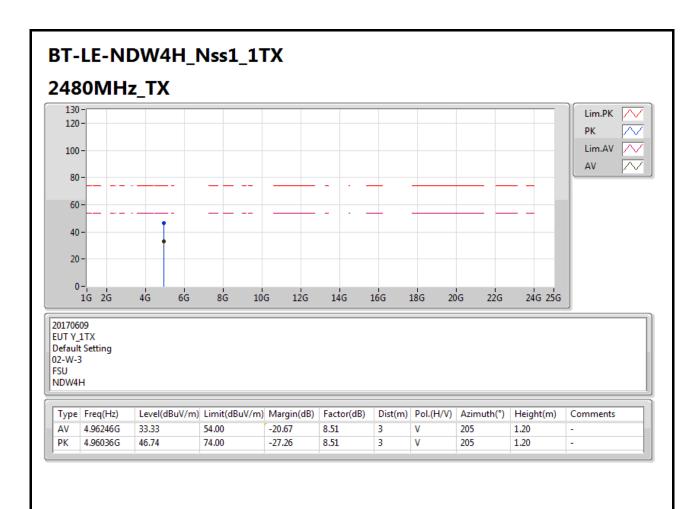




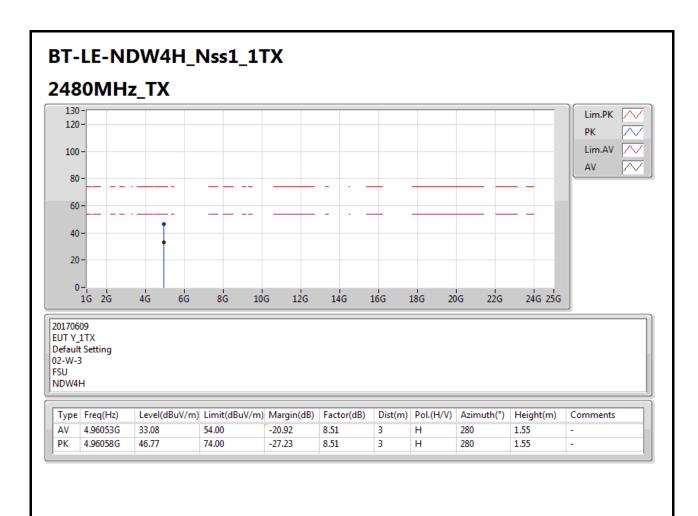














## RSE TX above 1GHz Result

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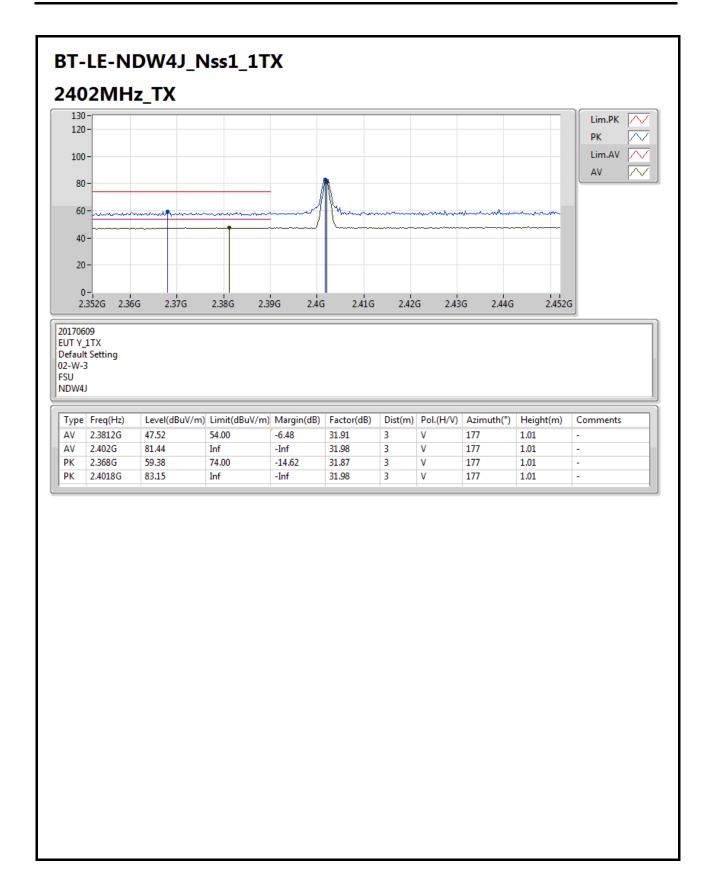
Test Mode: Mode 5

Summary

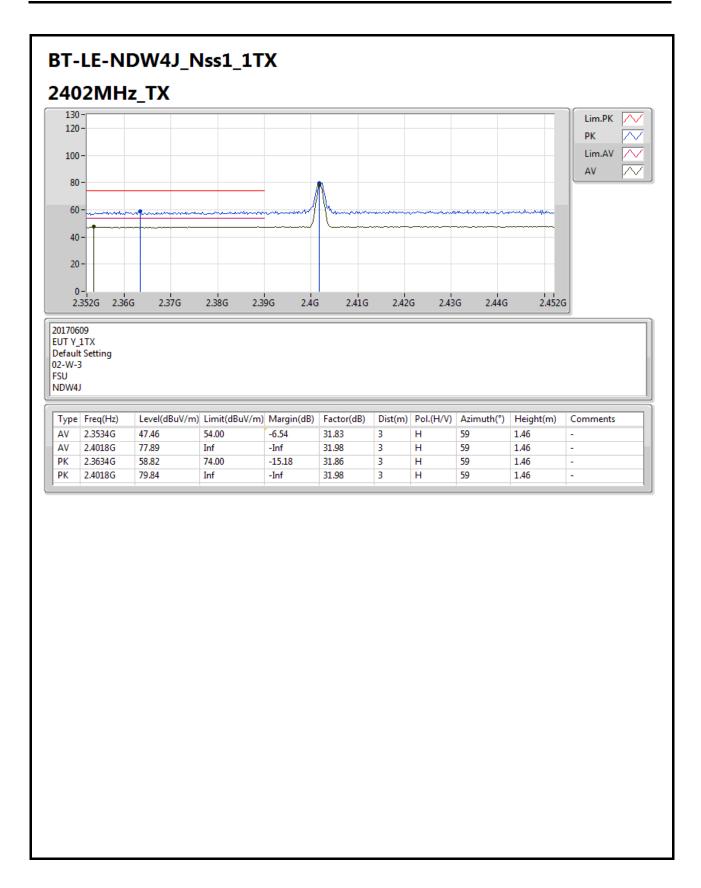
Mode	Result	Туре	Freq	Level	Limit	Margin	Factor	Dist	Pol.	Azimuth	Height	Comments
			(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)	(H/V)	(°)	(m)	
BT-LE-NDW4J_Nss1_1TX	-	-	-	-	-	-	-	-		-	-	-
2.4-2.4835GHz	Pass	AV	2.491G	47.77	54.00	-6.23	32.24	3	V	143	1.33	-

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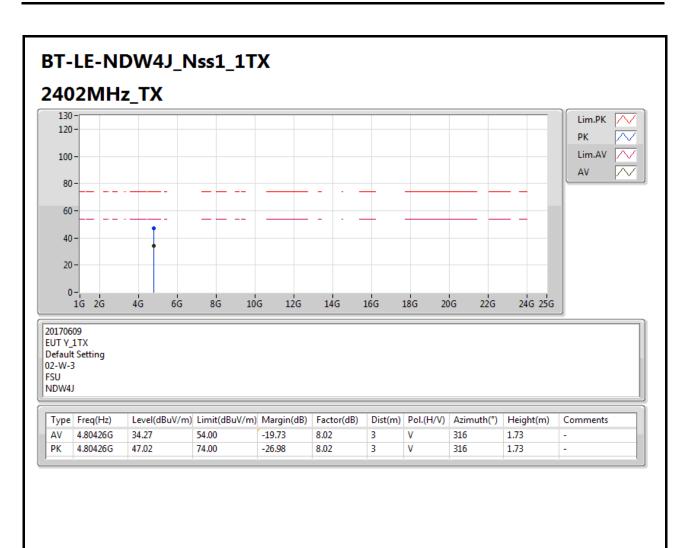




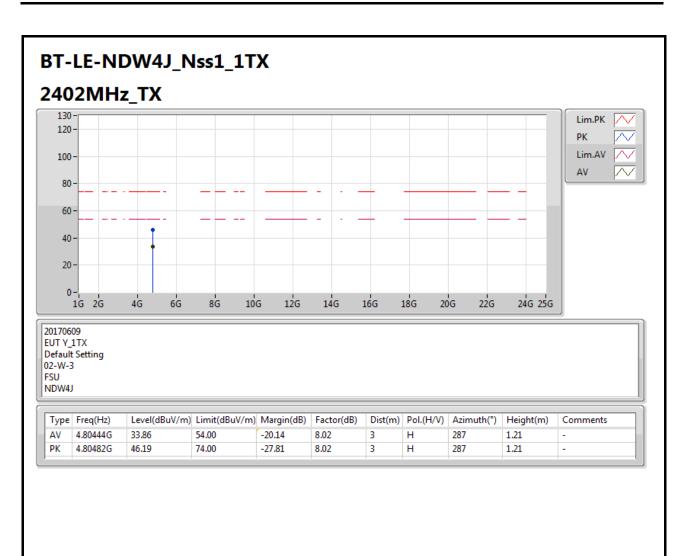




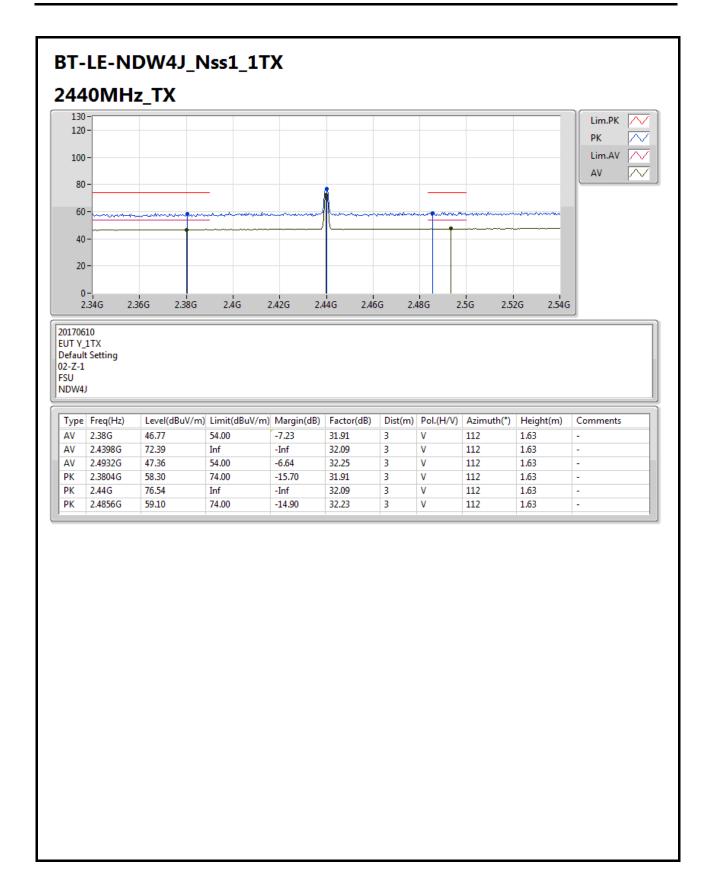




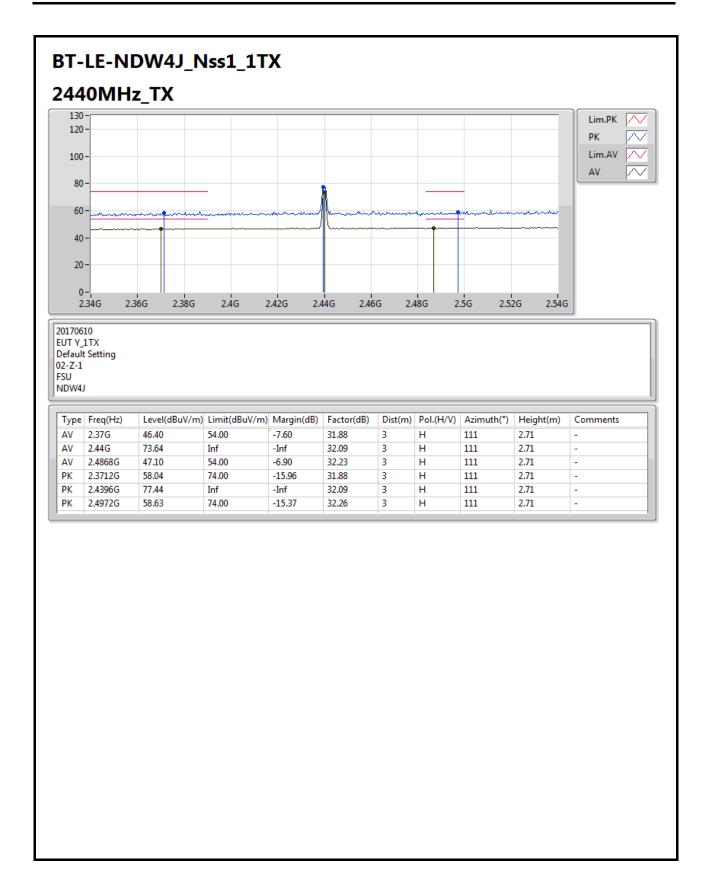




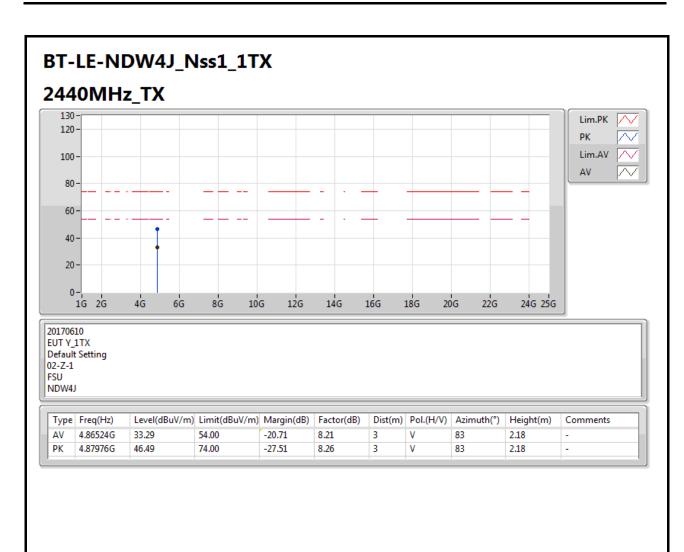




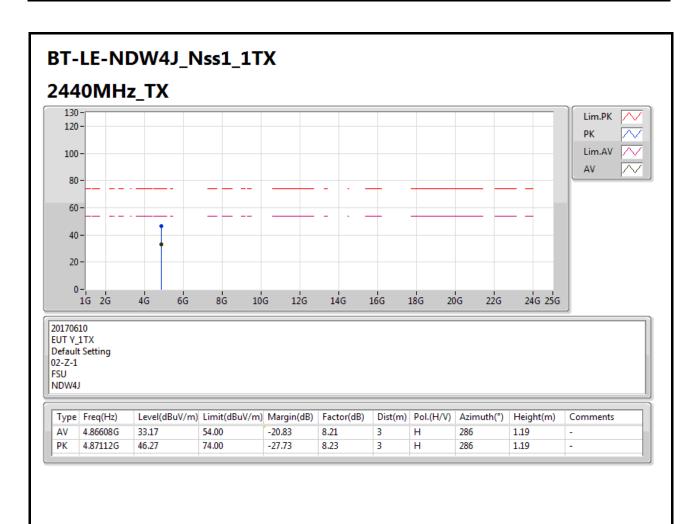




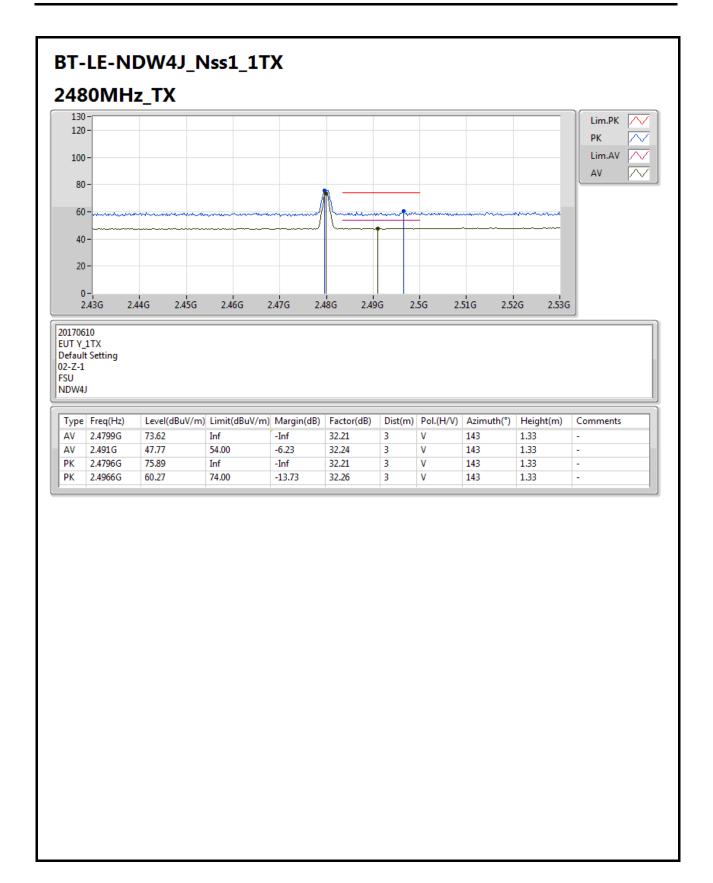




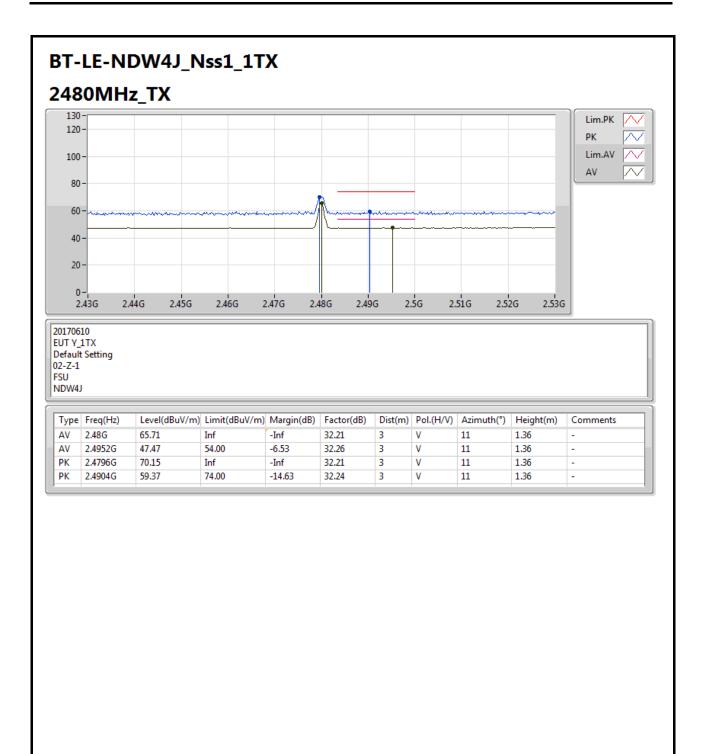




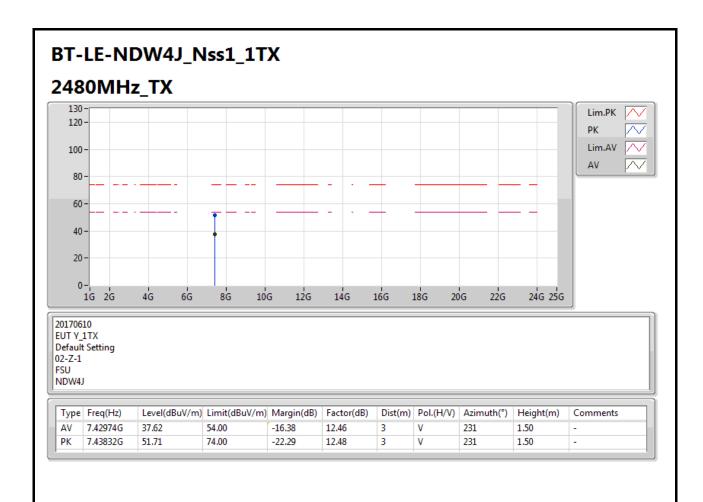




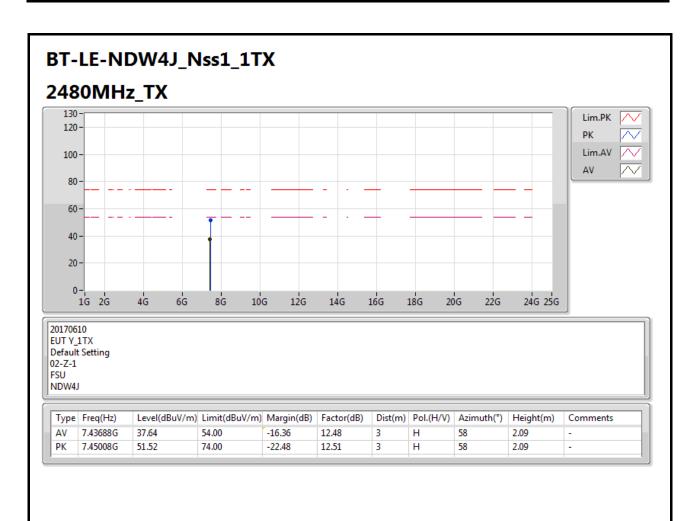














## RSE TX above 1GHz Result

Appendix E.2

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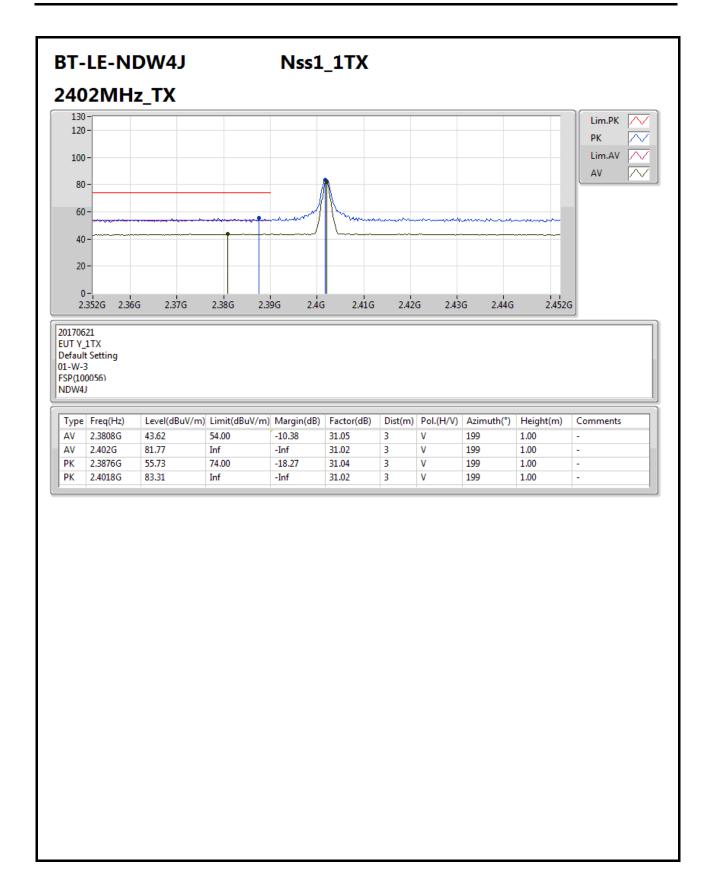
**Test Mode: Mode 6** 

**Summary** 

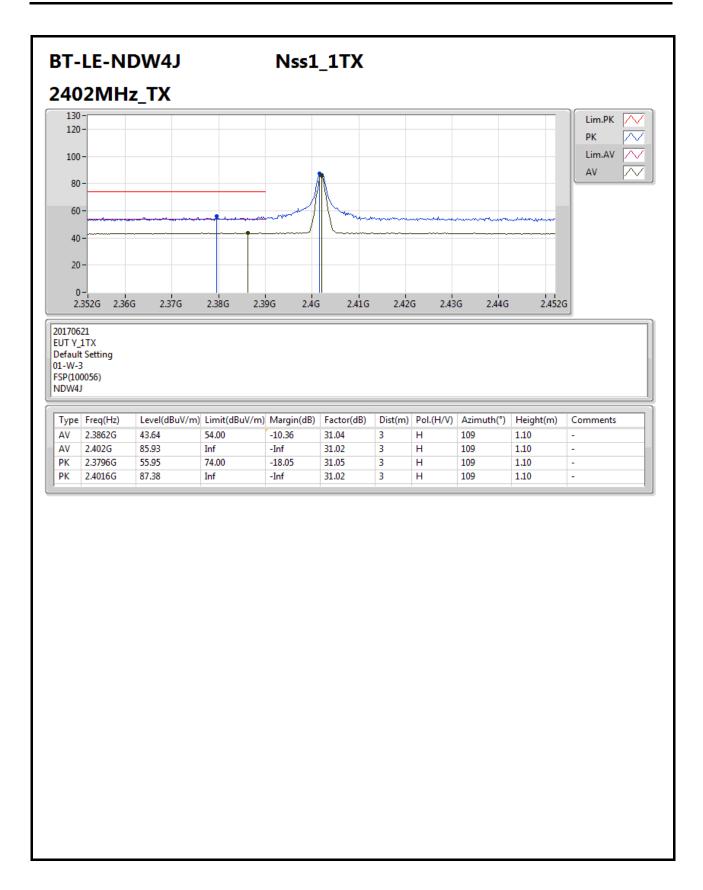
Mode	Result	Туре	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Pol. (H/V)	Azimuth	Height (m)	Comments
BT-LE-NDW4J Metallic Watch Band_Nss1_1TX	-	-	-	-	-	-	-	-	-	-	-	-
2.4-2.4835GHz	Pass	AV	2.4874G	43.66	54.00	-10.34	30.92	3	Н	42	1.37	-

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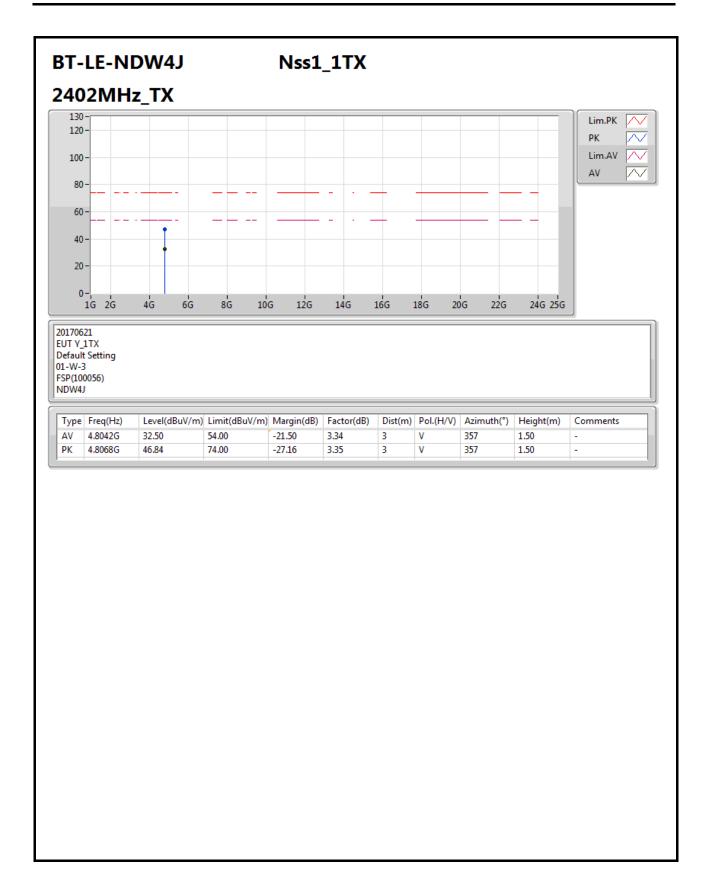




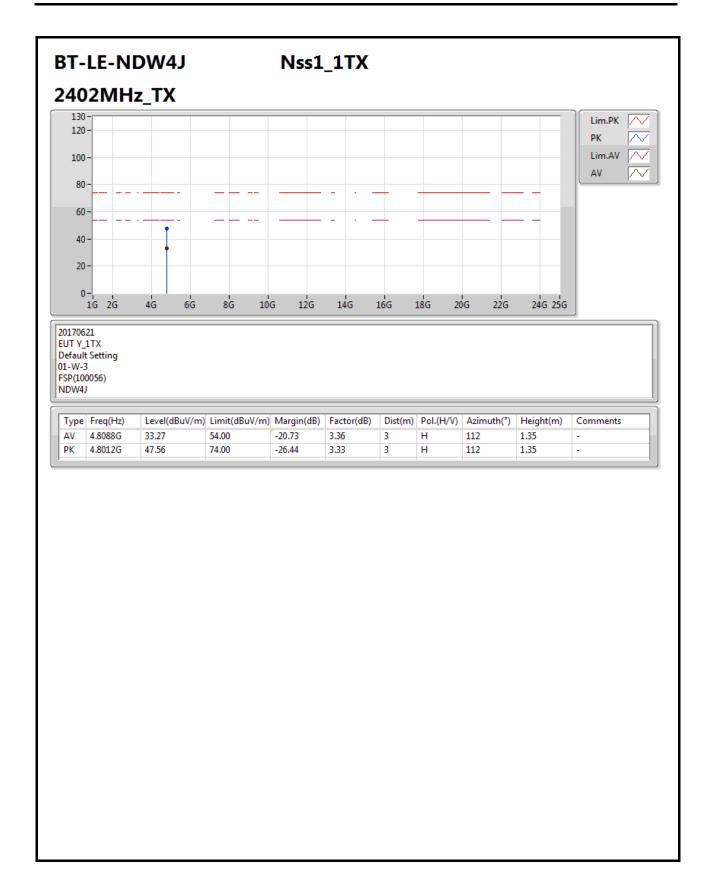




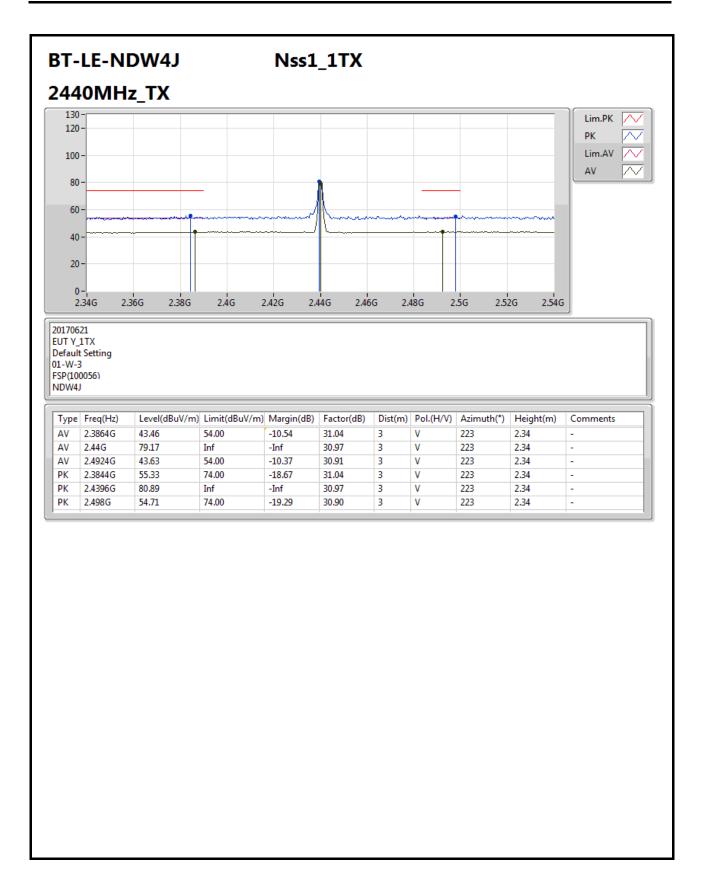




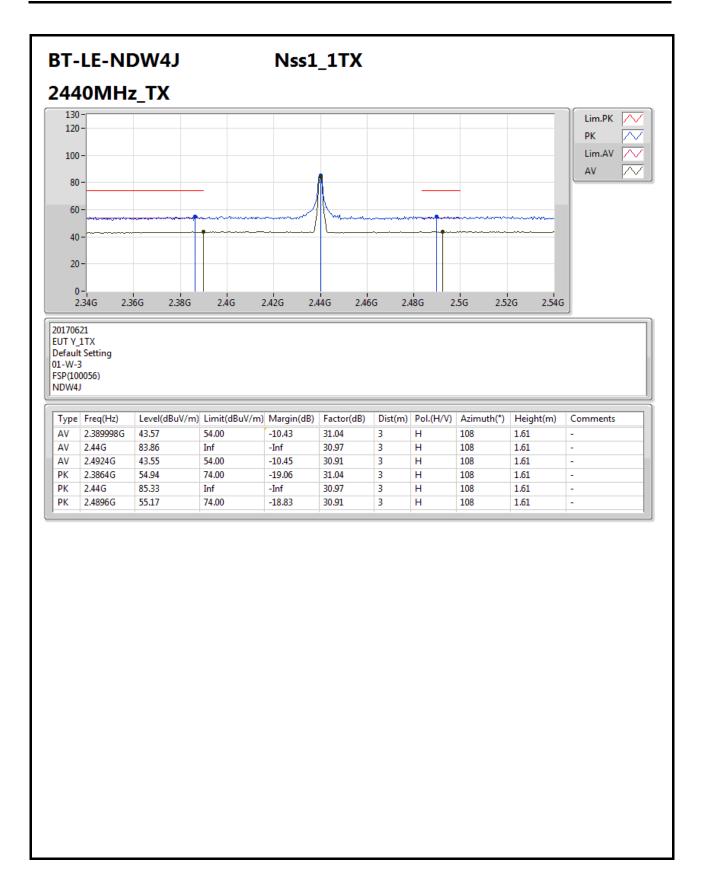




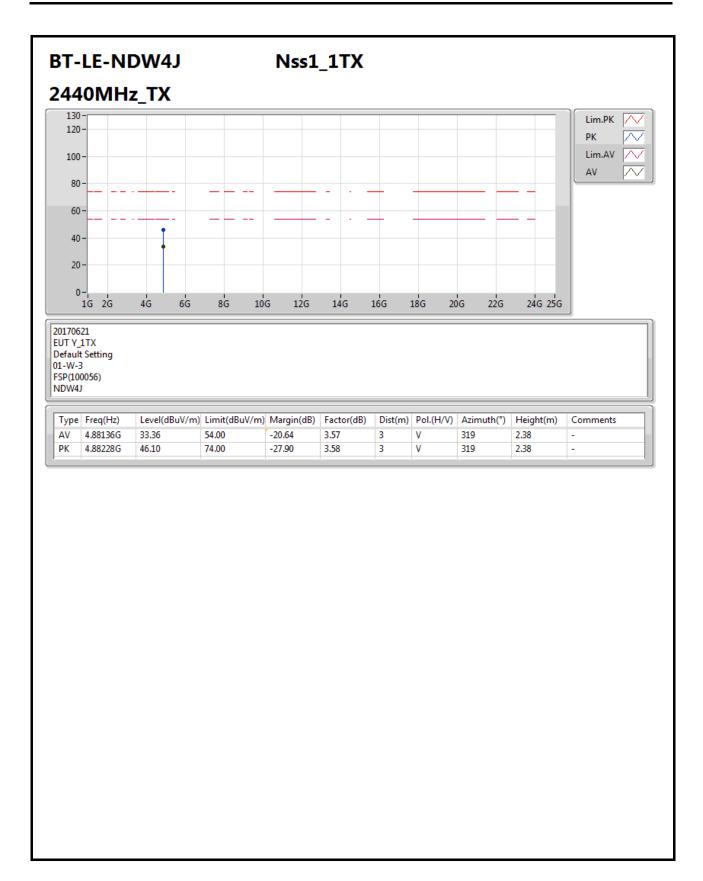




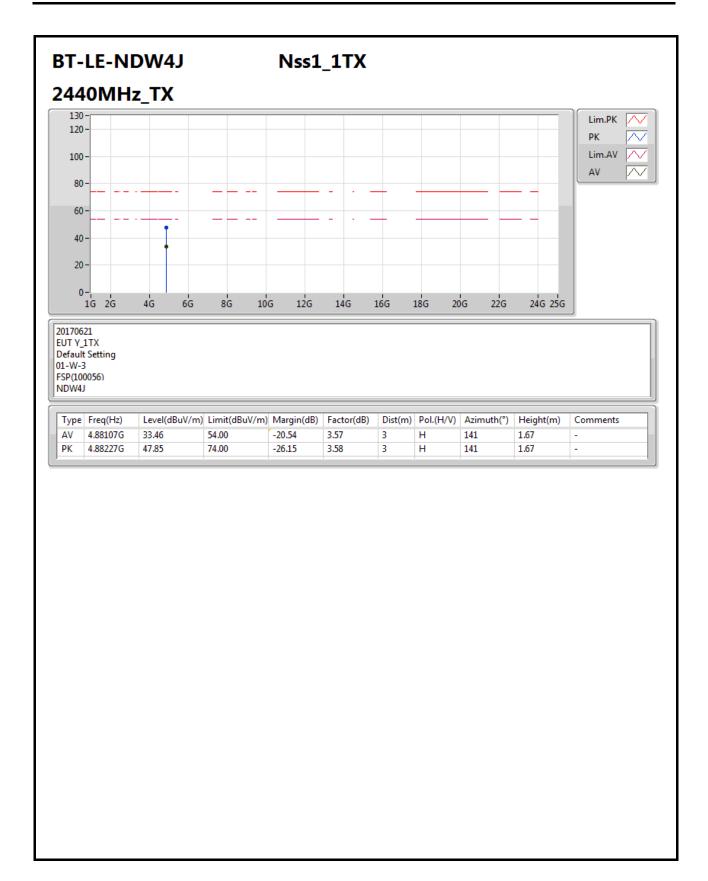




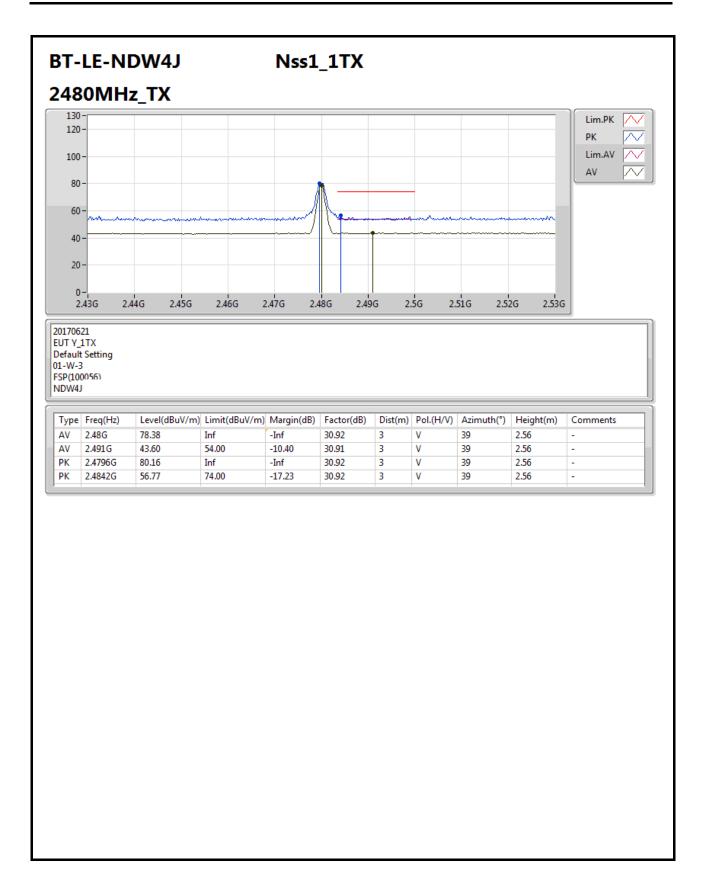




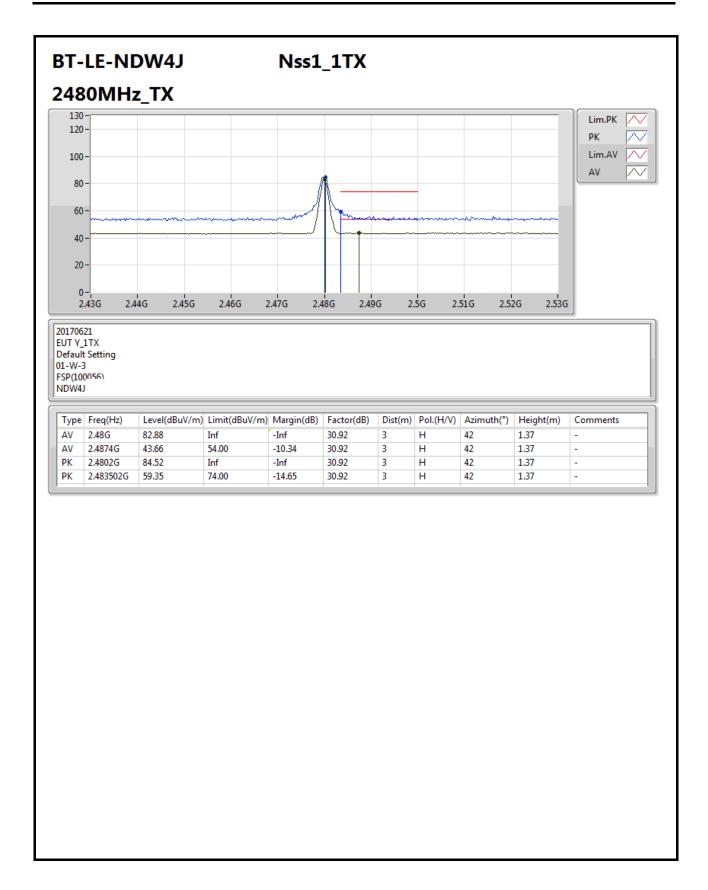




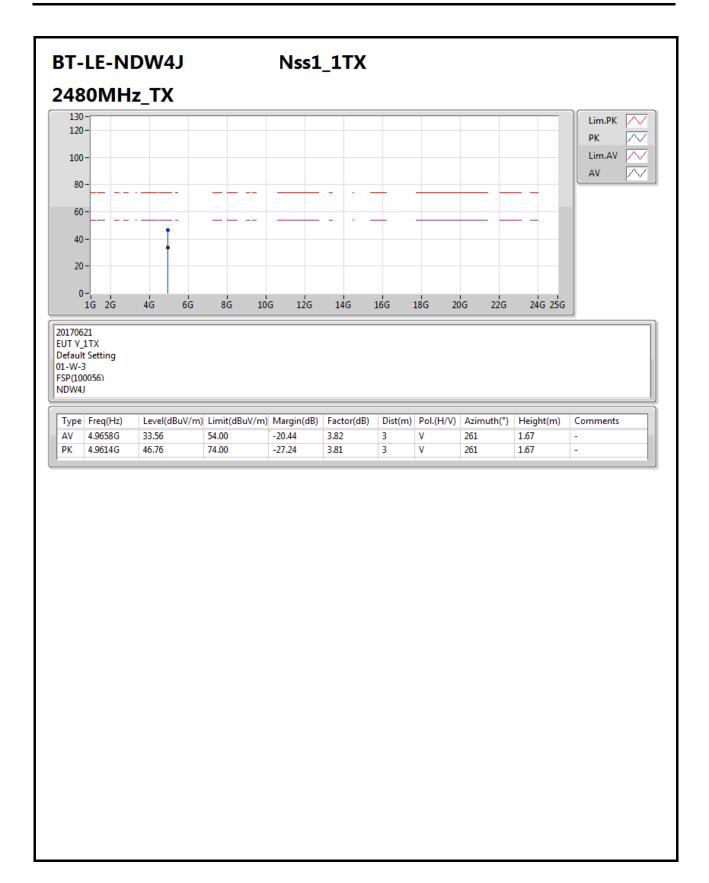




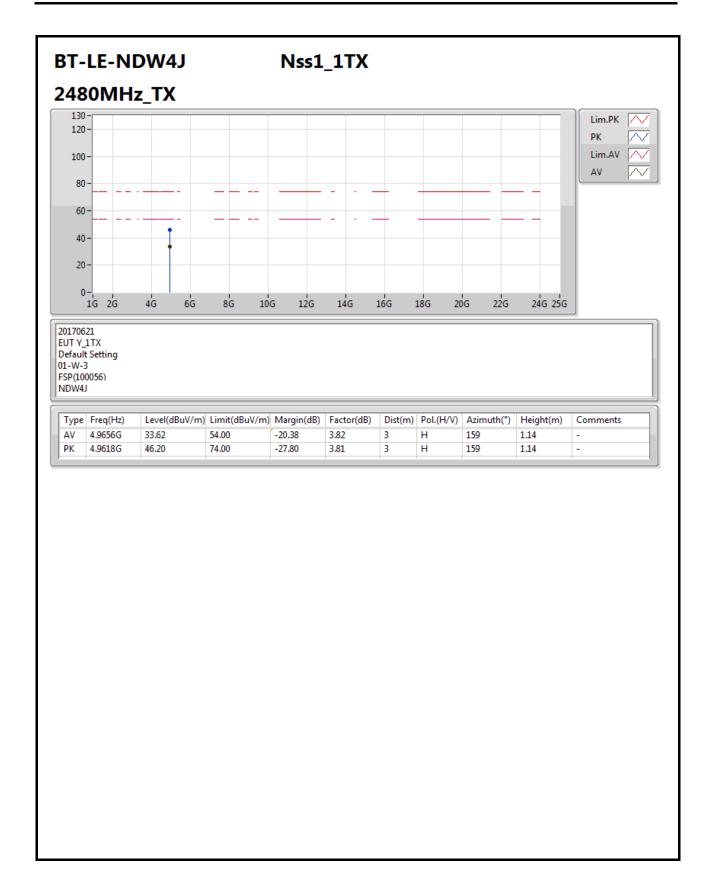














## RSE TX above 1GHz Result

Appendix E.2

Test Mode: Mode 7

Summary

Mode	Result	Туре	Freq	Level	Limit	Margin	Factor	Dist	Pol.	Azimuth	Height	Comments
			(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)	(H/V)	(°)	(m)	
BT-LE-NDW4K_Nss1_1TX	-	-	-	-	-	-	-	-	-	-	-	-
2.4-2.4835GHz	Pass	AV	2.4848G	47.97	54.00	-6.03	32.22	3	V	143	1.22	-

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