

Report No.: FR780412AL

# FCC Test Report

**MEVO PLUS** Equipment

**LIVESTREAM Brand Name** 

Model No. : A20201A

FCC ID : 2AHGTA20201A

**Standard** 47 CFR FCC Part 15.247 **Operating Band** 2400 MHz - 2483.5 MHz

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

**Applicant** : Livestream, Inc.

195 Morgan Ave. Brooklyn, NY 11237, USA

: Chicony Electronics (Dong Guan ) Co.,Ltd. Manufacturer

> San Zhong Guan Li Qu, Qingxi Town, **Dongguan City Guangdong 523651 China**

The product sample received on Aug. 08, 2017 and completely tested on Sep. 22, 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 INTERNATIONAL INC., the test report shall not be reproduced except in full.

Phoenix Chen

SPORTON INTERNATIONAL INC.





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## FCC Test Report

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## **Summary of Test Result**

	Conformance Test Specifications						
Report Clause	. I DESCRIPTION		Limit	Result			
1.1.2	15.203	Antenna Requirement	FCC 15.203	Complied			
3.1	15.207	AC Power-line Conducted Emissions	FCC 15.207	Complied			
3.2	15.247(a)	DTS Bandwidth	≥500kHz	Complied			
3.3	15.247(b)	Maximum Conducted Output Power	Power [dBm]:30	Complied			
3.4	15.247(e)	Power Spectral Density	PSD [dBm/3kHz]:8	Complied			
3.5	15.247(d)	Emissions in Non-restricted Frequency Bands	Non-Restricted Bands: >30 dBc	Complied			
3.6	15.247(d)	Emissions in Restricted Frequency Bands	Restricted Bands: FCC 15.209	Complied			

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## **Revision History**

Report No.	Version	Description	Issued Date
FR780412AL	Rev. 01	Initial issue of report	Sep. 20, 2017
FR780412AL	Rev. 02	1.Add Emissions in Restricted Frequency Bands(9kHz ~30MHz) test 2.Update Photographs of EUT 3.Update Appendix G test photos	Sep. 22, 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]

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Band	Mode	BWch (MHz)	Nant
2.4-2.4835GHz	BT-LE(1Mbps)	1.0	1TX

#### Note:

- Bluetooth LE uses a GFSK (1Mbps) modulation for DSSS.
- BWch is the nominal channel bandwidth.

#### 1.1.2 Antenna Information

Ant.	Port	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	1	-	GY196HT337-012	PIFA Antenna	I-PEX	1.2

### 1.1.3 EUT Information

	Operational Condition					
EU.	T Power T	уре	From AC Adapter			
				Type of	EUT	
$\boxtimes$	Stand-alone					
	Combined (EUT where the radio part is fully integrated within another device)				ated within another device)	
	Combined Equipment - Brand Name / Model No.:					
	Plug-in radio (EUT intended for a variety of host systems)					
	Host System - Brand Name / Model No.:					
	Other:					

### 1.1.4 Mode Test Duty Cycle

Mode	DC	DCF(dB)	T(s)	VBW(Hz) ≥ 1/T
BT-LE(1Mbps)	0.626	2.034	391.25u	3k

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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
- KDB 558074 D01 v04

## 1.3 Testing Location Information

	Testing Location						
$\boxtimes$	HWA YA	ADD	:	No. 52, Huaya 1st Rd.,	No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)		
	TEL: 886-3-327-3456 FAX: 886-3-327-0973						
	Test site Designation No. TW1190 with FCC.						
$\boxtimes$	LIN KOU	ADD	:	No. 30-2, Dingfu Vil., L	inkou Dist., New Taipei City, Taiwan (R.O.C.)		
	TEL: 886-2-2601-1640 FAX: 886-2-2601-1695						
	Test site Designation No. TW1095 with FCC.						

Test Condition	Test Site No.	Test Engineer	Test Environment	Test Date
RF Conducted	TH01-HY	Andy	24.2°C / 65%	24/Aug/2017
Radiated	03CH09-HY	Jerry	24.5°C / 63.8%	22/Sep/2017
AC Conduction	CO01-LK	Morrison	29°C / 51%	21/Aug/2017

## 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
Conducted Emission (150kHz ~ 30MHz)	3.6 dB	Confidence levels of 95%
Radiated Emission (30MHz ~ 1,000MHz)	2.1 dB	Confidence levels of 95%
Radiated Emission (1GHz ~ 18GHz)	2.6 dB	Confidence levels of 95%
Radiated Emission (18GHz ~ 40GHz)	2.9 dB	Confidence levels of 95%
Conducted Emission	1.3 dB	Confidence levels of 95%

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## 2 Test Configuration of EUT

## 2.1 Test Condition

Condition Item	Abbreviation/Remark	Remark
RF Conducted-DTS	Abbreviation	Remark
TnomVnom	Tnom	20°C
	Vnom	120V

## 2.2 Test Channel Mode

Test Software	Putty
---------------	-------

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

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## 2.3 The Worst Case Measurement Configuration

The Worst Case Mode for Following Conformance Tests		
Tests Item	AC power-line conducted emissions	
Condition	AC power-line conducted measurement for line and neutral	
Operating Mode	Normal Link	
1	REC, BT ON, WiFi 2.4GHz, adapter(USB charging)	

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 From	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	CTX			
1	Adapter Mode			
Operating Mode > 1GHz	СТХ			
	X Plane	Y Plane	Z Plane	
Orthogonal Planes of EUT				
Worst Planes of EUT		V		

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## 2.4 Accessories

Accessories				
AC Adoptor	Brand Name	I.T.E	Model Name	KSA29B0500200D5
AC Adapter   Power Rating   I/P: 100 - 240Vac, 0.5 A, O/P: 5.0 Vdc, 2.0 A		Vdc, 2.0 A		
Data Calila	Brand Name	Mevo		
Data Cable	Signal Line	3.04 meter, shielded cable, without ferrite core		
Litian Battami	Brand Name	FUJI	Model Name	901935
Li-ion Battery	Power Rating	3.7V/1200mAh 4.44Wh		

## 2.5 Support Equipment

	Support Equipment – RF Conducted			
No.	Equipment	Brand Name	Model Name	FCC ID
1	Notebook	DELL	E5410	DoC
2	Adapter for NB	DELL	HA65NM130	DoC
3	AC Source	G.W	APS-9102	-

Support Equipment – AC Conduction				
No.	Equipment	Brand Name	Model Name	FCC ID
Α	Micro SD Card	SanDisk	8GB	DoC
Z	iPad mini (Remote Workstation)	APPLE	16GB	DoC
Z	Notebook(BT) (Remote Workstation)	DELL	Latitude E5520	DoC

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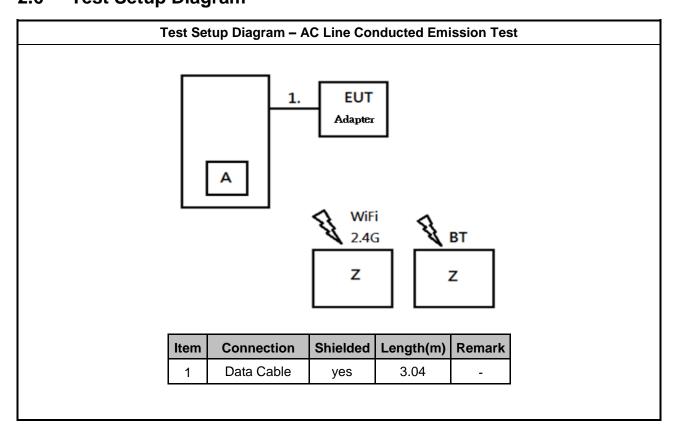
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2.6 Test Setup Diagram



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## **Test Setup Diagram - Radiated Test** AC Mains 1 **EUT** Adapter Power box Item Connection Shielded Length(m) Remark 1 AC Power line No 1.8 2 Data cable yes 3.04

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3 Transmitter Test Result

### 3.1 AC Power-line Conducted Emissions

### 3.1.1 AC Power-line Conducted Emissions Limit

AC Power-line Conducted Emissions Limit		
Frequency Emission (MHz)	Quasi-Peak	Average
0.15-0.5	66 - 56 *	56 - 46 *
0.5-5	56	46
5-30	60	50

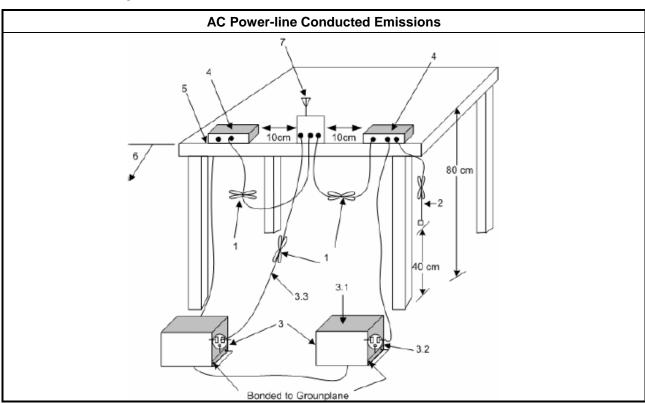
### 3.1.2 Measuring Instruments

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

#### 3.1.3 Test Procedures

I	Test Method
	<ul> <li>Refer as ANSI C63.10-2013, clause 6.2 foray power-line conducted emissions.</li> </ul>

### 3.1.4 Test Setup



### 3.1.5 Test Result of AC Power-line Conducted Emissions

Refer as Appendix A

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### 3.2 DTS Bandwidth

### 3.2.1 6dB Bandwidth Limit

6dB Bandwidth Limit	
Systems using digital modulation techniques:	
■ 6 dB bandwidth ≥ 500 kHz.	

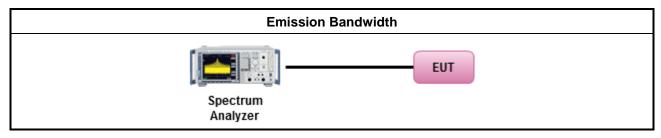
## 3.2.2 Measuring Instruments

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

### 3.2.3 Test Procedures

	Test Method
•	For the emission bandwidth shall be measured using one of the options below:
	Refer as KDB 558074, clause 8.1 Option 1 for 6 dB bandwidth measurement.
	Refer as KDB 558074, clause 8.2 Option 2 for 6 dB bandwidth measurement.
	Refer as ANSI C63.10, clause 6.9.3 for occupied bandwidth testing.

### 3.2.4 Test Setup



### 3.2.5 Test Result of Emission Bandwidth

Refer as Appendix B

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## 3.3 Maximum Conducted Output Power

### 3.3.1 Maximum Conducted Output Power Limit

Max	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							
e.i.r.	.p. P	ower Limit:							
•	240	0-2483.5 MHz Band							
	•	Point-to-multipoint systems (P2M): P <sub>eirp</sub> ≤ 36 dBm (4 W)							
	•	Point-to-point systems (P2P): $P_{eirp} \le MAX(36, [P_{Out} + G_{TX}]) dBm$							
	•	Smart antenna system (SAS)							
		- Single beam: P <sub>eirp</sub> ≤ MAX(36, P <sub>Out</sub> + G <sub>TX</sub> ) dBm							
		- Overlap beam: $P_{eirp} \le MAX(36, P_{Out} + G_{TX}) dBm$							
		- Aggregate power on all beams: $P_{eirp} \le MAX(36, [P_{Out} + G_{TX} + 8]) dBm$							
	$\mathbf{P}_{\text{Out}}$ = maximum peak conducted output power or maximum conducted output power in dBm, $\mathbf{G}_{\text{TX}}$ = the maximum transmitting antenna directional gain in dBi.								

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## 3.3.2 Measuring Instruments

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

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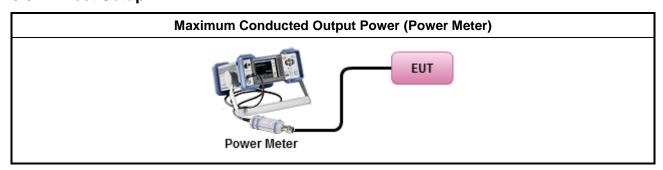
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### 3.3.3 Test Procedures

	Test Method
•	Maximum Peak Conducted Output Power
	Refer as KDB 558074, clause 9.1.1 Option 1 (RBW ≥ EBW method).
	Refer as KDB 558074, clause 9.1.2 Option 2 (integrated band power method)
	☐ Refer as KDB 558074, clause 9.1.3 Option 3 (peak power meter for VBW ≥ DTS BW)
•	Maximum Average Conducted Output Power
	Duty cycle ≥ 98%
	Refer as KDB 558074, clause 9.2.2.4 Method AVGSA-2 (spectral trace averaging).
	Duty cycle < 98%
	Refer as 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 KDB 558074, clause 9.2.3.1 Method AVGPM (using an RF average power meter).
•	For conducted measurement.
	If the EUT supports multiple transmit chains using options given below: Refer as 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

## 3.3.4 Test Setup



## 3.3.5 Test Result of Maximum Conducted Output Power

Refer as Appendix C

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### 3.4 Power Spectral Density

#### 3.4.1 Power Spectral Density Limit

#### **Power Spectral Density Limit**

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

#### 3.4.2 Measuring Instruments

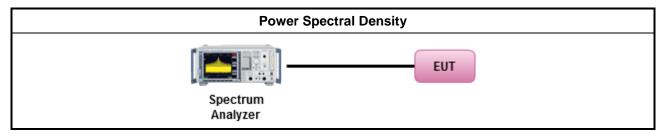
Refer a test equipment and calibration data table in this test report.

#### 3.4.3 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).
  - Refer as KDB 558074, clause 10.2 Method PKPSD (RBW=3-100kHz; Detector=peak).
- For conducted measurement.
  - If The EUT supports multiple transmit chains using options given below:
    - Measure and sum the spectra across the outputs. Refer as 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.

#### 3.4.4 Test Setup



#### 3.4.5 Test Result of Power Spectral Density

Refer as Appendix D

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### 3.5 Emissions in Non-restricted Frequency Bands

#### 3.5.1 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.

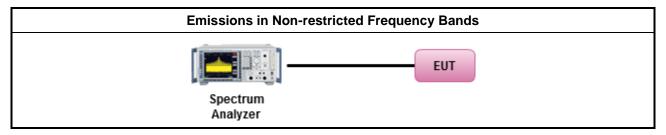
### 3.5.2 Measuring Instruments

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

#### 3.5.3 Test Procedures

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

#### 3.5.4 Test Setup



### 3.5.5 Test Result of Emissions in Non-restricted Frequency Bands

Refer as Appendix E

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### 3.6 Emissions in Restricted Frequency Bands

#### 3.6.1 Emissions in Restricted Frequency Bands Limit

Restricted Band Emissions Limit									
Frequency Range (MHz)   Field Strength (uV/m)   Field Strength (dBuV/m)   Measure Distance									
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 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.

#### 3.6.2 Measuring Instruments

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

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3.6.3

**Test Procedures** 

## Test Method

- The average emission levels shall be measured in [duty cycle ≥ 98 or duty factor].
- Refer as ANSI C63.10, clause 6.10.3 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:
  - Refer as KDB 558074, clause 12 for unwanted emissions into restricted bands.
    - Refer as KDB 558074, clause 12.2.5.3 (ANSI C63.10, clause 4.1.4.2.3), Reduced VBW≥1/T.

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- Refer as 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 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.
  - Refer as KDB 558074, clause 13.2 (ANSI C63.10, clause 6.10.6) for marker-delta method for band-edge measurements.
  - Refer as KDB 558074, clause 13.3 for narrower resolution bandwidth (100kHz) using the band power and summing the spectral levels (i.e., 1 MHz).
- For conducted and cabinet radiation measurement, refer as KDB 558074, clause 12.2.2.
  - For conducted unwanted emissions into restricted bands (absolute emission limits).
     Devices with multiple transmit chains using options given below:
    - (1) Measure and sum the spectra across the outputs or
    - (2) Measure and add 10 log(N) dB
  - For 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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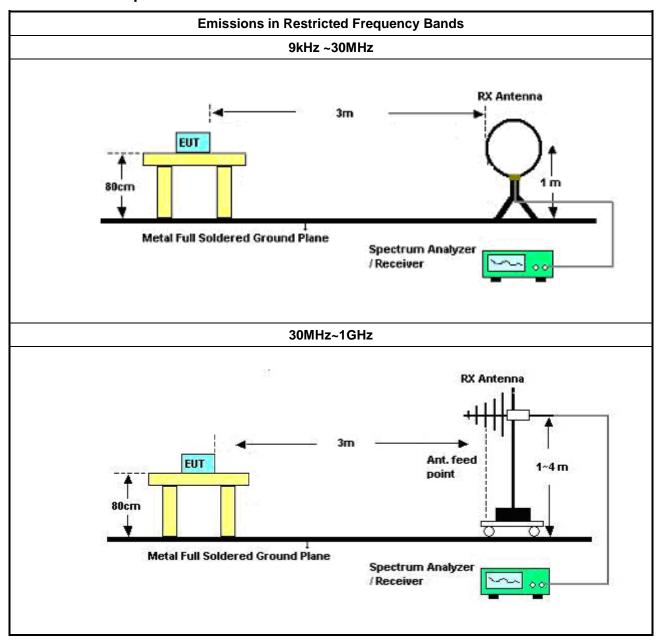
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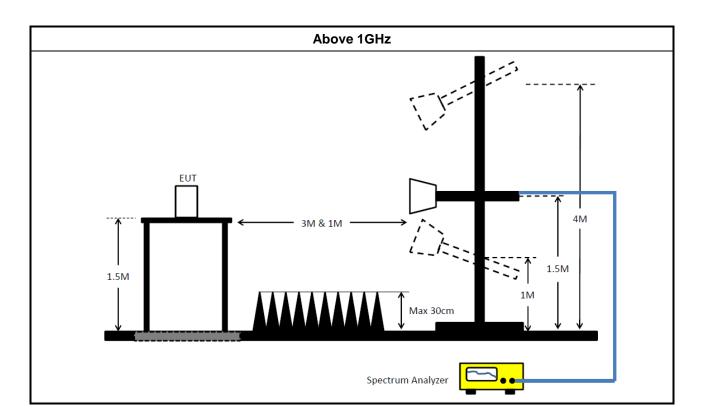
Report No.: FR780412AL

#### **Test Setup** 3.6.4



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### 3.6.5 Test Result of Emissions in Restricted Frequency Bands (Below 30MHz)

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

### 3.6.6 Test Result of Emissions in Restricted Frequency Bands

Refer as Appendix F

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# 4 Test Equipment and Calibration Data

### **Instrument for AC Conduction**

Instrument	Manufacturer	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
Test Receiver	R&S	ESR3	102051	9 KHz ~ 3.6 GHz	29/Apr/2017	28/Apr/2018
Two-Line V-Network	R&S	ENV 216	100003	9 kHz ~ 30 MHz	30/Aug/2016	29/Aug/2017
RF Cable-CON	Weiyang	WY200	CB018	9 kHz ~ 30 MHz	07/Feb/2017	06/Feb/2018
Impulsbegrenzer Pulse Limiter	R&S	ESH3-Z2	100921	10 kHz ~ 30 MHz	20/Oct/2016	19/Oct/2017

#### **Instrument for Radiated Test**

Instrument	Manufacturer	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
3m Semi Anechoic Chamber	TDK	SAC-3M	03CH09-HY	30MHz ~ 1GHz	25/Apr/2017	24/Apr/2018
3m Semi Anechoic Chamber	TDK	SAC-3M	03CH09-HY	1GHz ~ 18GHz	28/Jun/2017	27/Jun/2018
Amplifier	Agilent	8449B	3008A02096	1GHz ~ 26.5GHz	25/Apr/2017	24/Apr/2018
Amplifier	EMC	EMC9135	980232	9KHz~1GHz	25/Apr/2017	24/Apr/2018
Spectrum Analyzer	KEYSIGHT	N9010A	MY54200885	10Hz ~ 44GHz	20/Jul/2017	19/Jul/2018
Bilog Antenna	TESEQ	CBL 6111D	35418	30MHz~1GHz	01/Oct/2016	30/Sep/2017
Horn Antenna	SCHWARZBECK	BBHA 9120D	BBHA9120D 1534	1GHz~18GHz	28/Apr/2017	27/Apr/2018
Horn Antenna	SCHWARZBECK	BBHA9170	BBHA9170614	18GHz ~ 40GHz	06/Feb/2017	05/Feb/2018
Loop Antenna	R&S	HFH2-Z2	100330	9 kHz~30 MHz	10/Nov/2016	09/Nov/2017
RF Cable-R03m	Jye Bao	RG142	CB021	9kHz ~ 1GHz	02/Feb/2017	01/Feb/2018
RF Cable-high	Jye Bao	RG142	03CH09-HY	1GHz ~ 40GHz	02/Feb/2017	01/Feb/2018
Receiver	R&S	ESU-26	100422/026	20Hz ~ 26.5GHz	21/Sep/2017	20/Sep/2018

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## FCC Test Report

**Instrument for Conducted Test** 

Instrument	Manufacturer	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
Spectrum Analyzer	R&S	FSV 40	101013	10Hz~40GHz	30/Dec/2016	29/Dec/2017
Power Sensor	Anritsu	MA2411B	1027452	300MHz ~ 40GHz	24/Feb/2017	23/Feb/2018
Power Meter	Anritsu	ML2495A	1124009	300MHz ~ 40GHz	24/Feb/2017	23/Feb/2018
Signal Generator	R&S	SMR40	100116	10MHz ~ 40GHz	27/Jul/2017	26/Jul/2018
RF Cable-0.2m	HUBER+SUHNER	SUCOFLEX_104	MY677/3	30MHz ~ 26.5GHz	02/Oct/2016	01/Oct/2017
RF Cable-0.2m	HUBER+SUHNER	SUCOFLEX_104	MY678/3	30MHz ~ 26.5GHz	02/Oct/2016	01/Oct/2017
RF Cable-0.5m	HUBER+SUHNER	SUCOFLEX_103	10715/4	30MHz ~ 26.5GHz	02/Oct/2016	01/Oct/2017

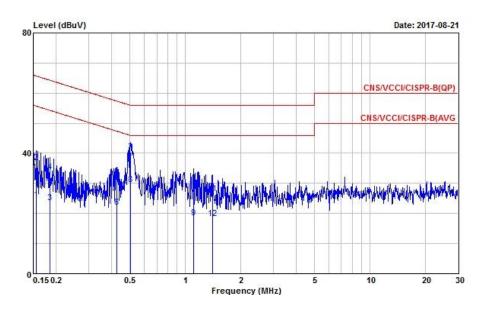
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	AC Power-line Conducted Emissions Result						
Operating Mode	1 Power Phase		Neutral				
Operating Function	REC , BT ON , WiFi 2.4GHz , adapter(usb charging)						



	Freq	Level	Over Limit	Limit Line	Read Level	LISN	Cable	Remark
-	MHz	dBuV	——dB	dBuV	dBuV	dB	dB	-
1	0.156	24.60	-31.07	55.67	14.90	9.67	0.03	Average
2	0.156	36.77	-28.90	65.67	27.07	9.67	0.03	QP
3	0.184	23.58	-30.72	54.30	13.90	9.65	0.03	Average
4	0.184	33.79	-30.51	64.30	24.11	9.65	0.03	QP
5	0.424	32.28	-25.09	57.37	22.51	9.73	0.04	QP
6	0.424	22.13	-25.24	47.37	12.36	9.73	0.04	Average
7	0.505	40.27	-15.73	56.00	30.51	9.72	0.04	QP
8	0.505	29.69	-16.31	46.00	19.93	9.72	0.04	Average
9	1.110	18.63	-27.37	46.00	8.85	9.69	0.09	Average
10	1.110	28.38	-27.62	56.00	18.60	9.69	0.09	QP
11	1.410	26.54	-29.46	56.00	16.76	9.68	0.10	QP
12	1.410	18.36	-27.64	46.00	8.58	9.68	0.10	Average

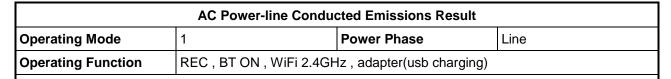
Note 1: ">20dB" means emission levels that exceed the level of 20 dB below the applicable limit.

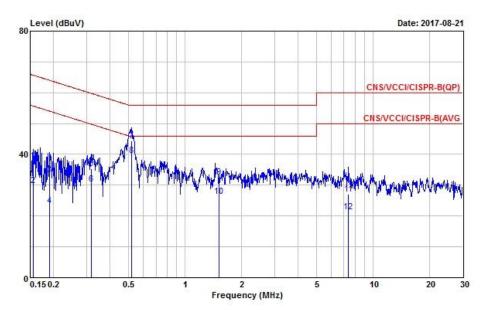
Note 2: "N/F" means Nothing Found emissions (No emissions were detected.)

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	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
-	MHz	dBuV	dB	dBuV	dBuV	dB	dB	·
1	0.156	38.13	-27.56	65.69	28.40	9.70	0.03	QP
2	0.156	29.89	-25.80	55.69	20.16	9.70	0.03	Average
3	0.190	33.25	-30.79	64.04	23.53	9.69	0.03	QP
4	0.190	23.20	-30.84	54.04	13.48	9.69	0.03	Average
5	0.317	35.28	-24.51	59.79	25.53	9.72	0.03	QP
6	0.317	30.47	-19.32	49.79	20.72	9.72	0.03	Average
7	0.521	44.44	-11.56	56.00	34.67	9.73	0.04	QP
8 @	0.521	39.72	-6.28	46.00	29.95	9.73	0.04	Average
9	1.513	32.66	-23.34	56.00	22.90	9.65	0.11	QP
10	1.513	26.29	-19.71	46.00	16.53	9.65	0.11	Average
11	7.410	27.07	-32.93	60.00	16.97	9.83	0.27	QP
12	7.410	21.35	-28.65	50.00	11.25	9.83	0.27	Average

Note 1: ">20dB" means emission levels that exceed the level of 20 dB below the applicable limit.

Note 2: "N/F" means Nothing Found emissions (No emissions were detected.)

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### EBW-DTS Result

Appendix B

**Summary** 

Mode	Max-N dB (Hz)	Max-OBW (Hz)	ITU-Code	Min-N dB (Hz)	Min-OBW (Hz)
BT-LE(1Mbps)	-	-	-	-	-
2.4-2.4835GHz	715k	1.057M	1M06F1D	713.75k	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

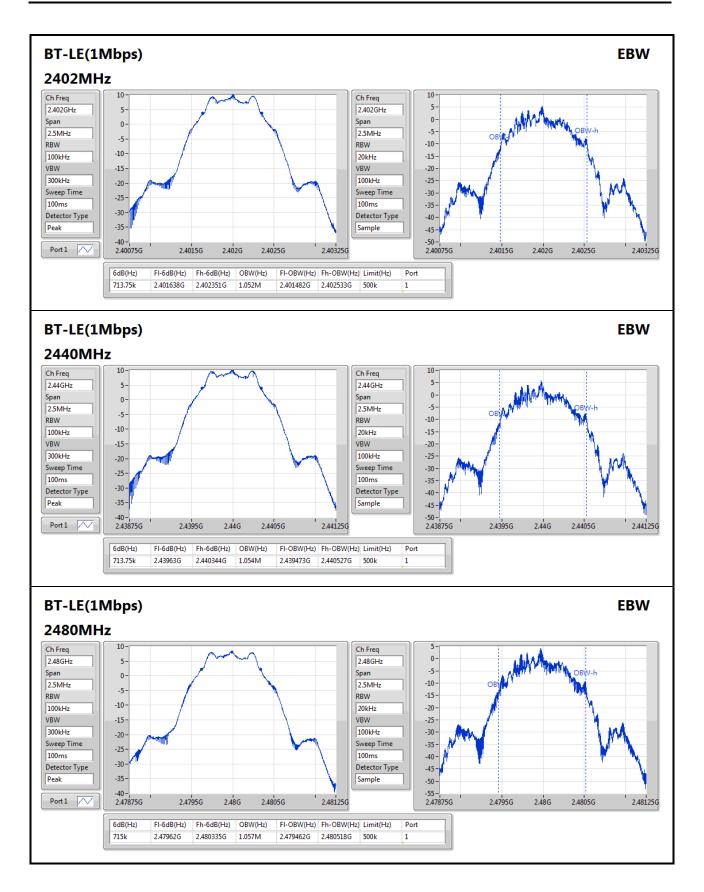
Mode	Result	Limit	Port 1-N dB	Port 1-OBW
		(Hz)	(Hz)	(Hz)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	500k	713.75k	1.052M
2440MHz	Pass	500k	713.75k	1.054M
2480MHz	Pass	500k	715k	1.057M

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

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## **AV Power-DTS Result**

Appendix C

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**Summary** 

Mode	Power	Power
	(dBm)	(W)
BT-LE(1Mbps)	-	-
2.4-2.4835GHz	9.09	0.00811

### Result

Mode	Result	Gain	Power	Power Limit
		(dBi)	(dBm)	(dBm)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	1.20	8.79	30.00
2440MHz	Pass	1.20	9.09	30.00
2480MHz	Pass	1.20	8.09	30.00

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## **PSD-DTS** Result

Appendix D

**Summary** 

Mode	PD
	(dBm/RBW)
BT-LE(1Mbps)	-
2.4-2.4835GHz	-4.43

RBW=3kHz.

### Result

Mode	Result	Gain	PD	PD Limit
		(dBi)	(dBm/RBW)	(dBm/RBW)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	1.20	-6.20	8.00
2440MHz	Pass	1.20	-4.43	8.00
2480MHz	Pass	1.20	-5.60	8.00

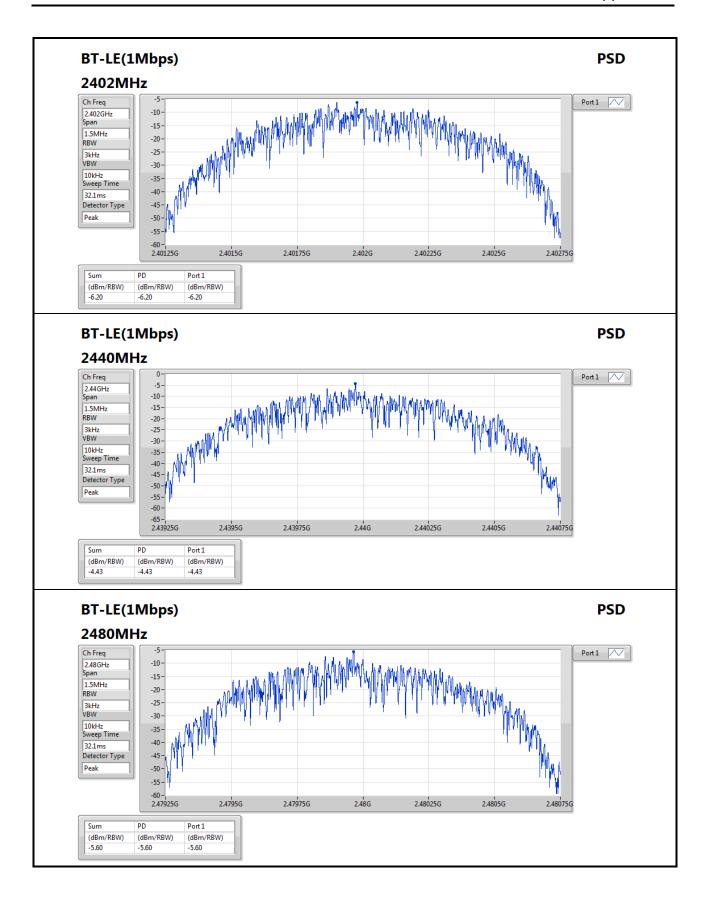
RBW=3kHz.

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

Appendix E

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Summary

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)	-		-			-		-		-	-		-
2.4-2.4835GHz	Pass	2.439913G	9.27	-20.73	1.976496G	-53.71	2.398716G	-54.13	2.484888G	-53.04	6.963071G	-46.56	1

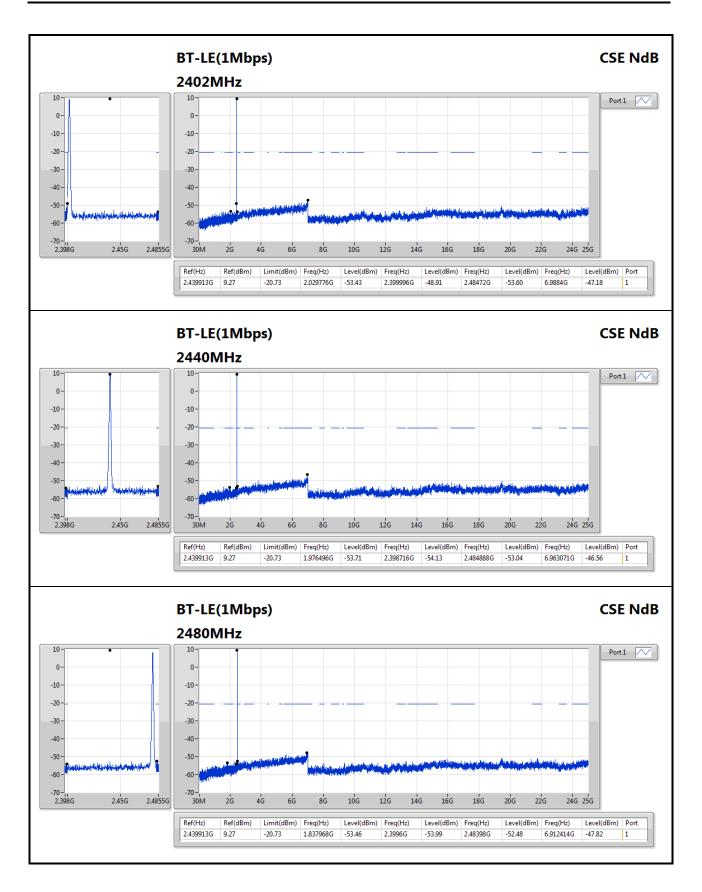
#### Result

 - Count													
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	2.439913G	9.27	-20.73	2.029776G	-53.43	2.399996G	-48.91	2.48472G	-53.60	6.9884G	-47.18	1
2440MHz	Pass	2.439913G	9.27	-20.73	1.976496G	-53.71	2.398716G	-54.13	2.484888G	-53.04	6.963071G	-46.56	1
2480MHz	Pass	2.439913G	9.27	-20.73	1.837968G	-53.46	2.3996G	-53.99	2.48398G	-52.48	6.912414G	-47.82	1

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## RSE TX below 1GHz Result (9KHz~30MHz)

Appendix F.1

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**Summary** 

Mode	Result	Туре	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
			(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
BT-LE(1Mbps)	-	-	-	-	-	-	-	-	-	-	-	-
2.4-2.4835GHz	Pass	QP	336.52M	42.87	46.00	-3.13	-14.54	3	Horizontal	0	1.00	-

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## RSE TX below 1GHz Result (9KHz~30MHz)

Appendix F.1

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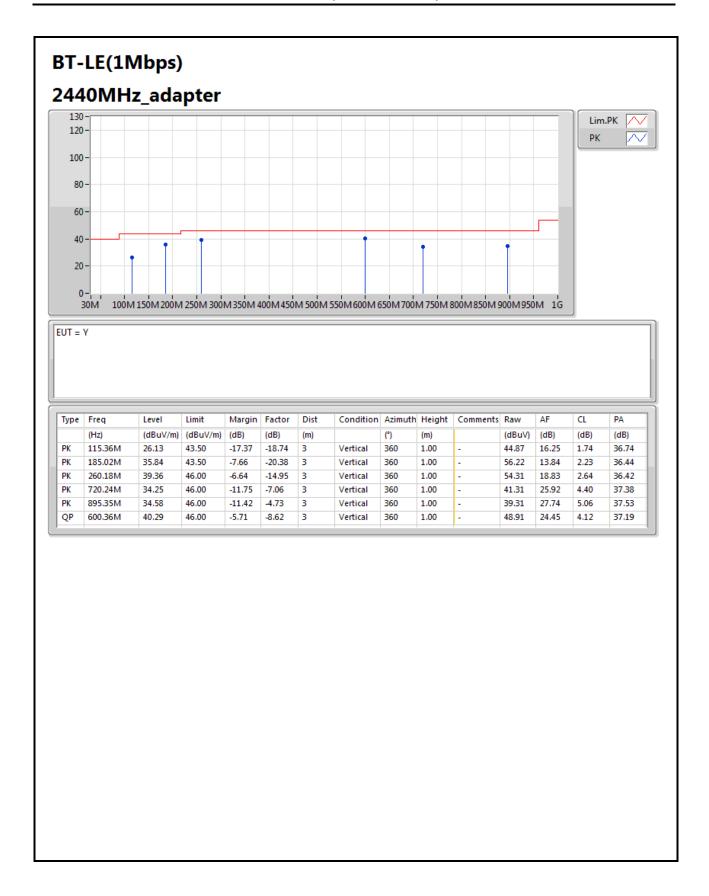
#### Result

Mode	Result	Туре	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
			(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
BT-LE(1Mbps)	-	-	-	-	-	-	-	-	-	-	-	-
2440MHz	Pass	PK	177.44M	37.07	43.50	-6.43	-20.18	3	Horizontal	0	1.00	-
2440MHz	Pass	PK	215.999784M	39.98	43.50	-3.52	-19.88	3	Horizontal	0	1.00	-
2440MHz	Pass	PK	239.52M	38.73	46.00	-7.27	-17.83	3	Horizontal	0	1.00	-
2440MHz	Pass	PK	600.36M	42.53	46.00	-3.47	-8.62	3	Horizontal	0	1.00	-
2440MHz	Pass	PK	648.86M	39.93	46.00	-6.07	-7.53	3	Horizontal	0	1.00	-
2440MHz	Pass	QP	336.52M	42.87	46.00	-3.13	-14.54	3	Horizontal	0	1.00	-
2440MHz	Pass	PK	115.36M	26.13	43.50	-17.37	-18.74	3	Vertical	360	1.00	-
2440MHz	Pass	PK	185.02M	35.84	43.50	-7.66	-20.38	3	Vertical	360	1.00	-
2440MHz	Pass	PK	260.18M	39.36	46.00	-6.64	-14.95	3	Vertical	360	1.00	-
2440MHz	Pass	PK	720.24M	34.25	46.00	-11.75	-7.06	3	Vertical	360	1.00	-
2440MHz	Pass	PK	895.35M	34.58	46.00	-11.42	-4.73	3	Vertical	360	1.00	-
2440MHz	Pass	QP	600.36M	40.29	46.00	-5.71	-8.62	3	Vertical	360	1.00	-

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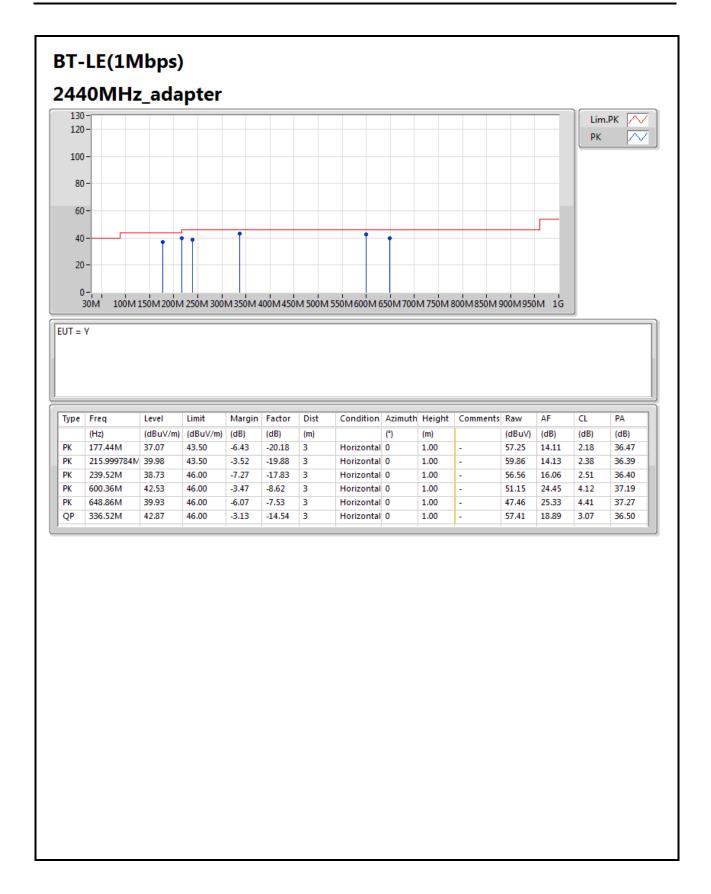


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# RSE TX below 1GHz Result (30MHz~1GHz)

Appendix F.2

Summary

Mode	Result	Туре	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
			(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
BT-LE(1Mbps)	-	-	-	-	-	-	-	-	-	-	-	-
2.4-2.4835GHz	Pass	PK	600.36M	44.10	46.00	-1.90	-8.62	3	Horizontal	0	1.00	-

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# RSE TX below 1GHz Result (30MHz~1GHz)

Appendix F.2

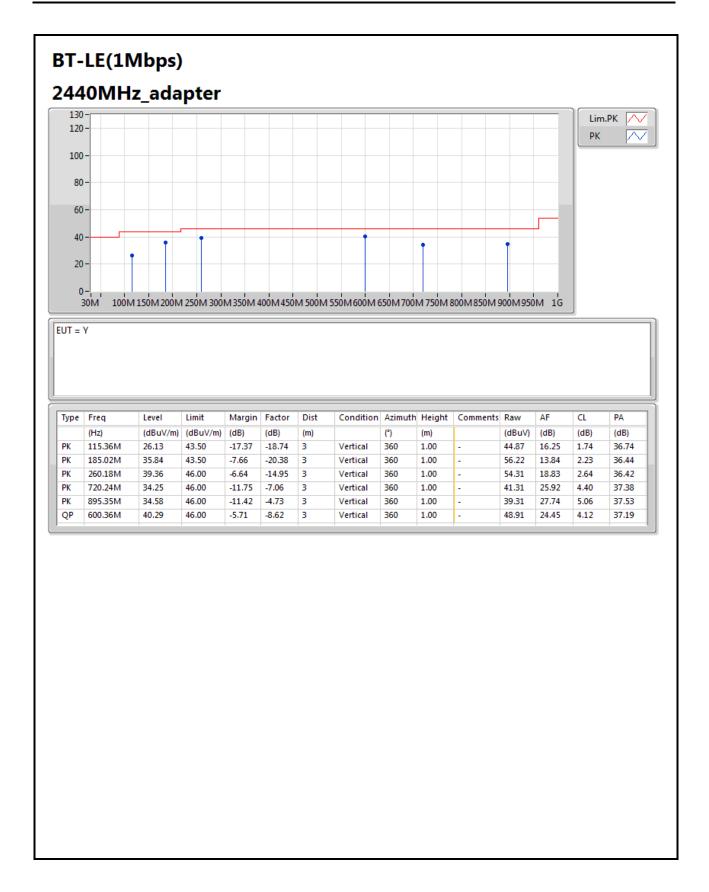
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### Result

Mode	Result	Туре	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
			(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
BT-LE(1Mbps)	-	-	-	-	-	-	-	-	-	-	-	-
2440MHz	Pass	PK	177.44M	37.07	43.50	-6.43	-20.18	3	Horizontal	0	1.00	-
2440MHz	Pass	PK	215.999784M	39.98	43.50	-3.52	-19.88	3	Horizontal	0	1.00	-
2440MHz	Pass	PK	239.52M	38.73	46.00	-7.27	-17.83	3	Horizontal	0	1.00	-
2440MHz	Pass	PK	600.36M	44.10	46.00	-1.90	-8.62	3	Horizontal	0	1.00	-
2440MHz	Pass	PK	648.86M	39.93	46.00	-6.07	-7.53	3	Horizontal	0	1.00	-
2440MHz	Pass	QP	336.52M	42.87	46.00	-3.13	-14.54	3	Horizontal	0	1.00	-
2440MHz	Pass	PK	115.36M	26.13	43.50	-17.37	-18.74	3	Vertical	360	1.00	-
2440MHz	Pass	PK	185.02M	35.84	43.50	-7.66	-20.38	3	Vertical	360	1.00	-
2440MHz	Pass	PK	260.18M	39.36	46.00	-6.64	-14.95	3	Vertical	360	1.00	-
2440MHz	Pass	PK	720.24M	34.25	46.00	-11.75	-7.06	3	Vertical	360	1.00	-
2440MHz	Pass	PK	895.35M	34.58	46.00	-11.42	-4.73	3	Vertical	360	1.00	-
2440MHz	Pass	QP	600.36M	40.29	46.00	-5.71	-8.62	3	Vertical	360	1.00	-

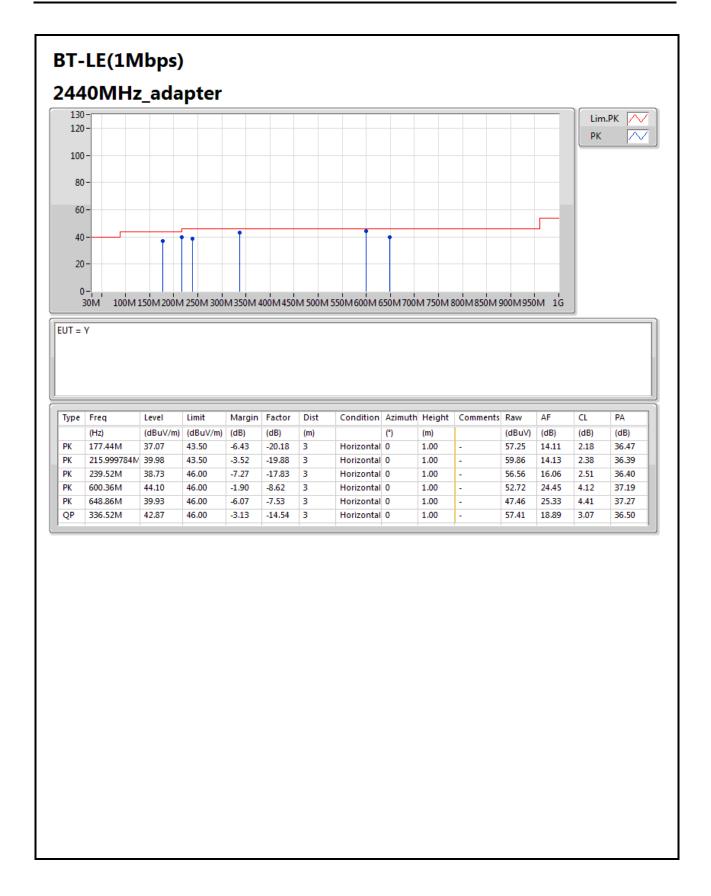
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## RSE TX above 1GHz Result

Appendix F.3

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Summary

Mode	Result	Туре	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
			(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
BT-LE(1Mbps)	-	-	-	-	-	-	-	-	-	-	-	-
2.4-2.4835GHz	Pass	AV	4.804G	50.19	54.00	-3.81	2.10	3	Vertical	28	2.36	-

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## RSE TX above 1GHz Result

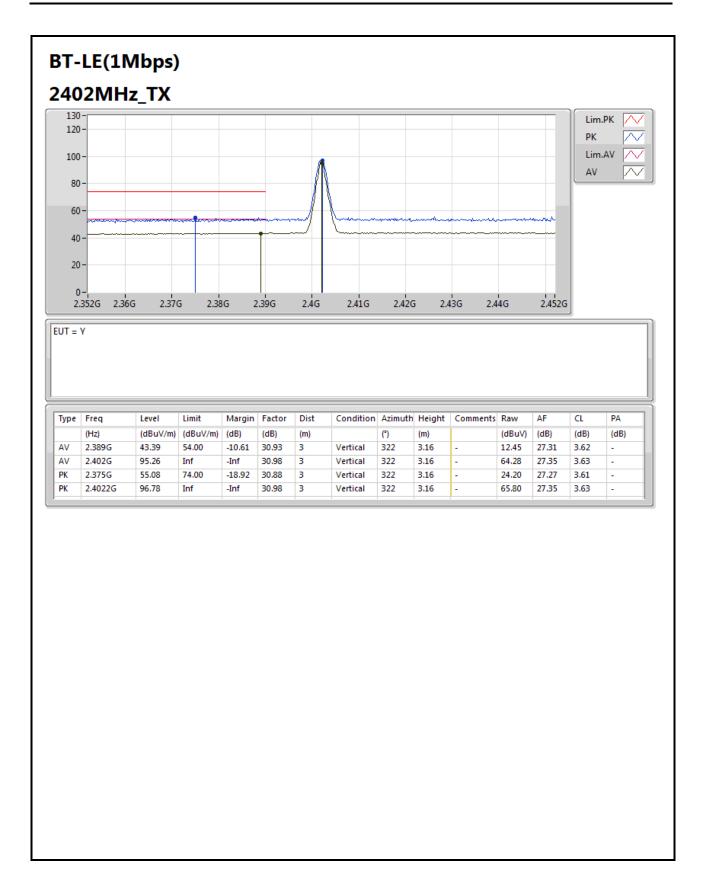
Appendix F.3

### Result

Mode	Result	Туре	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
			(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
BT-LE(1Mbps)	-	-	-	-	-	-	-	-	-	-	-	-
2402MHz	Pass	AV	2.3804G	43.59	54.00	-10.41	30.90	3	Horizontal	279	1.07	-
2402MHz	Pass	AV	2.402G	98.85	Inf	-Inf	30.98	3	Horizontal	279	1.07	-
2402MHz	Pass	AV	4.804G	46.51	54.00	-7.49	2.10	3	Horizontal	260	3.67	-
2402MHz	Pass	PK	2.389G	54.24	74.00	-19.76	30.93	3	Horizontal	279	1.07	-
2402MHz	Pass	PK	2.4018G	100.46	Inf	-Inf	30.98	3	Horizontal	279	1.07	-
2402MHz	Pass	PK	4.804G	52.97	74.00	-21.03	2.10	3	Horizontal	260	3.67	-
2402MHz	Pass	AV	2.389G	43.39	54.00	-10.61	30.93	3	Vertical	322	3.16	-
2402MHz	Pass	AV	2.402G	95.26	Inf	-Inf	30.98	3	Vertical	322	3.16	-
2402MHz	Pass	AV	4.804G	50.19	54.00	-3.81	2.10	3	Vertical	28	2.36	-
2402MHz	Pass	PK	2.375G	55.08	74.00	-18.92	30.88	3	Vertical	322	3.16	-
2402MHz	Pass	PK	2.4022G	96.78	Inf	-Inf	30.98	3	Vertical	322	3.16	-
2402MHz	Pass	PK	4.804G	56.16	74.00	-17.84	2.10	3	Vertical	28	2.36	-
2440MHz	Pass	AV	2.3848G	43.30	54.00	-10.70	30.92	3	Horizontal	278	1.28	-
2440MHz	Pass	AV	2.44G	98.90	Inf	-Inf	31.11	3	Horizontal	278	1.28	-
2440MHz	Pass	AV	2.4984G	44.00	54.00	-10.00	31.32	3	Horizontal	278	1.28	-
2440MHz	Pass	AV	4.88G	43.57	54.00	-10.43	2.34	3	Horizontal	278	1.02	-
2440MHz	Pass	PK	2.3884G	54.32	74.00	-19.68	30.93	3	Horizontal	278	1.28	-
2440MHz	Pass	PK	2.4396G	101.05	Inf	-Inf	31.11	3	Horizontal	278	1.28	-
2440MHz	Pass	PK	2.4996G	54.84	74.00	-19.16	31.33	3	Horizontal	278	1.28	-
2440MHz	Pass	PK	4.88G	50.81	74.00	-23.19	2.34	3	Horizontal	278	1.02	-
2440MHz	Pass	AV	2.3836G	43.47	54.00	-10.53	30.91	3	Vertical	320	3.11	-
2440MHz	Pass	AV	2.44G	97.16	Inf	-Inf	31.11	3	Vertical	320	3.11	-
2440MHz	Pass	AV	2.498G	43.97	54.00	-10.03	31.32	3	Vertical	320	3.11	-
2440MHz	Pass	AV	4.88G	48.13	54.00	-5.87	2.34	3	Vertical	35	2.44	-
2440MHz	Pass	PK	2.3884G	54.04	74.00	-19.96	30.93	3	Vertical	320	3.11	-
2440MHz	Pass	PK	2.4404G	98.67	Inf	-Inf	31.12	3	Vertical	320	3.11	-
2440MHz	Pass	PK	2.4896G	54.48	74.00	-19.52	31.29	3	Vertical	320	3.11	-
2440MHz	Pass	PK	4.88G	54.19	74.00	-19.81	2.34	3	Vertical	35	2.44	-
2480MHz	Pass	AV	2.48G	95.82	Inf	-Inf	31.26	3	Horizontal	276	1.01	-
2480MHz	Pass	AV	2.483502G	45.32	54.00	-8.68	31.27	3	Horizontal	276	1.01	-
2480MHz	Pass	AV	4.96G	38.87	54.00	-15.13	2.59	3	Horizontal	225	1.98	-
2480MHz	Pass	PK	2.4798G	97.39	Inf	-Inf	31.26	3	Horizontal	276	1.01	-
2480MHz	Pass	PK	2.4852G	54.95	74.00	-19.05	31.28	3	Horizontal	276	1.01	-
2480MHz	Pass	PK	4.96G	47.57	74.00	-26.43	2.59	3	Horizontal	225	1.98	-
2480MHz	Pass	AV	2.48G	93.49	Inf	-Inf	31.26	3	Vertical	318	2.64	-
2480MHz	Pass	AV	2.483502G	44.58	54.00	-9.42	31.27	3	Vertical	318	2.64	-
2480MHz	Pass	AV	4.96G	44.58	54.00	-9.42	2.59	3	Vertical	44	2.70	-
2480MHz	Pass	PK	2.4798G	95.06	Inf	-Inf	31.26	3	Vertical	318	2.64	-
2480MHz	Pass	PK	2.499G	54.79	74.00	-19.21	31.33	3	Vertical	318	2.64	-
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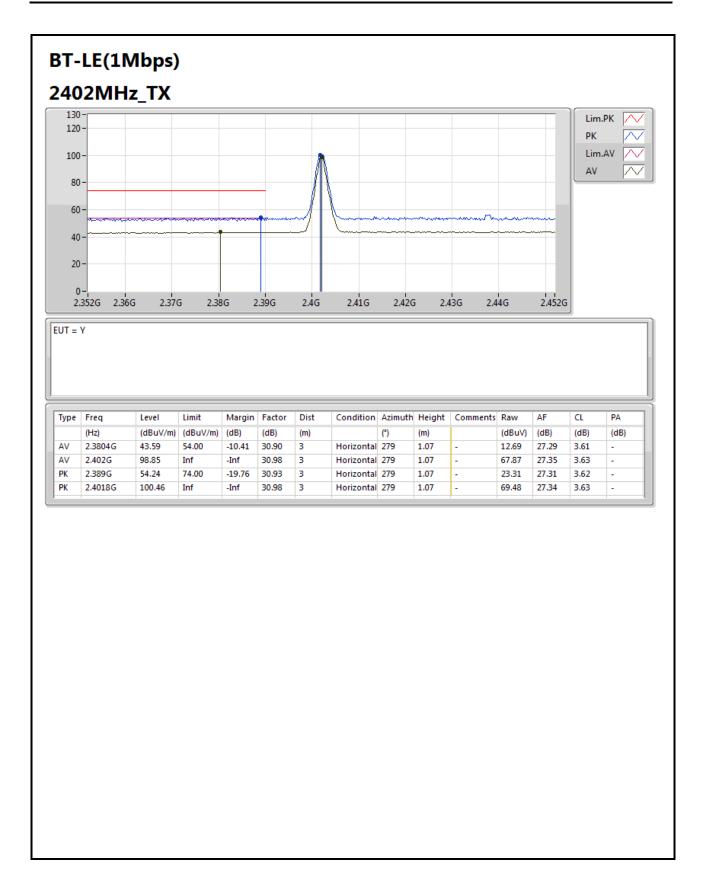
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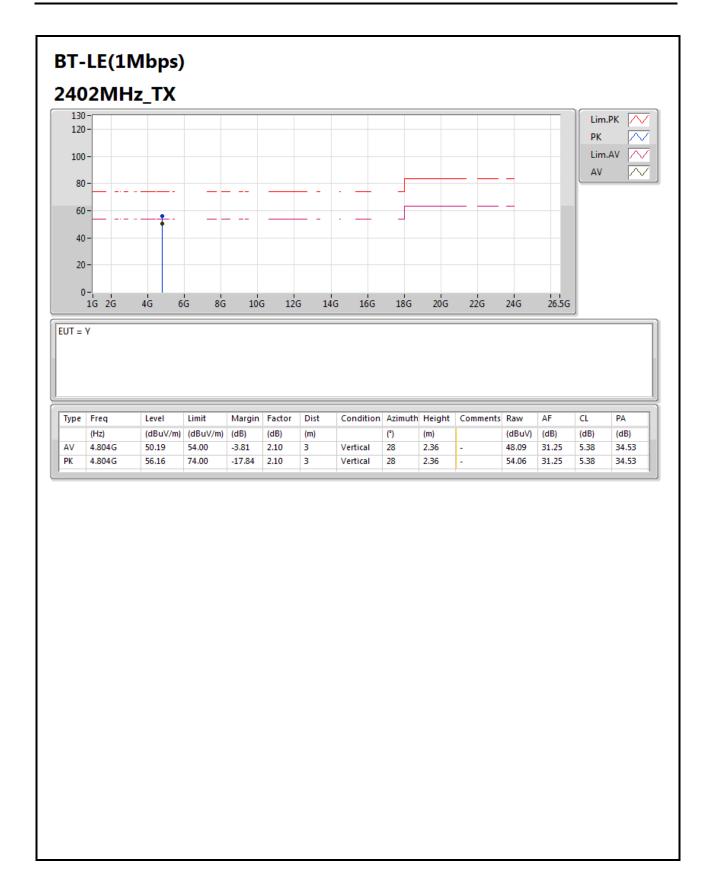
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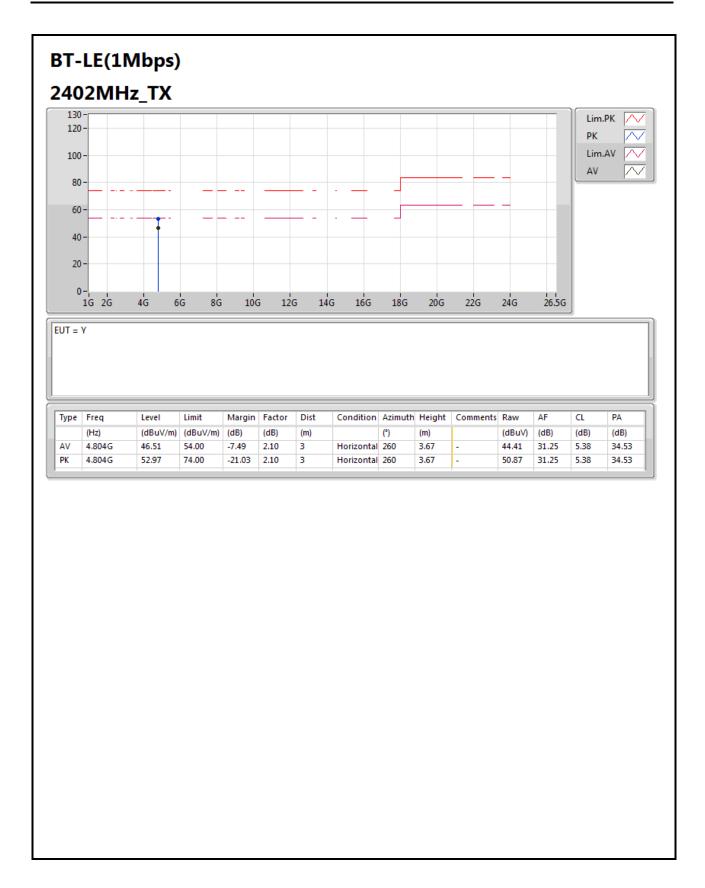
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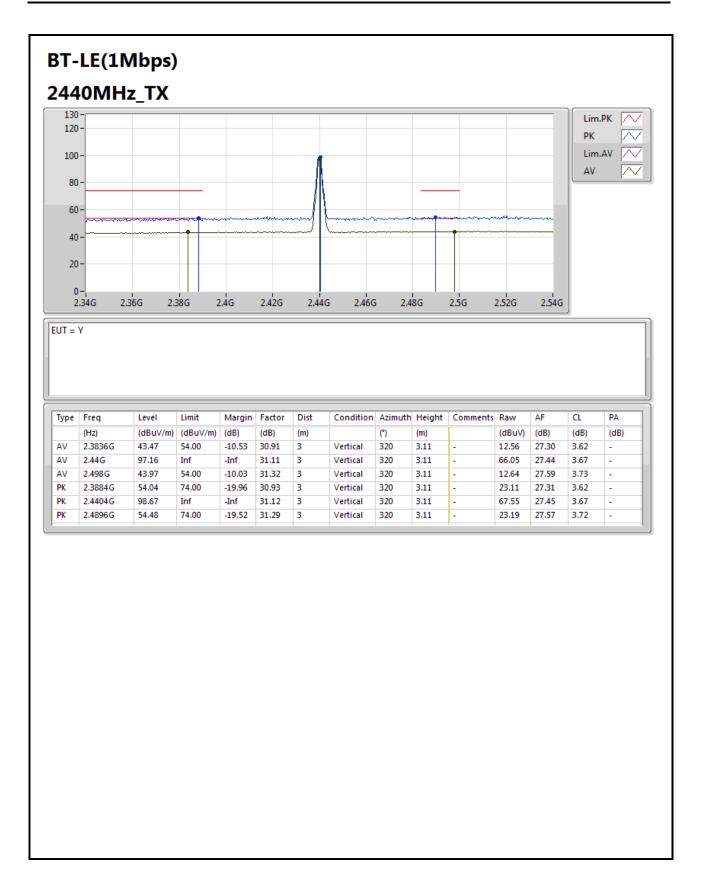
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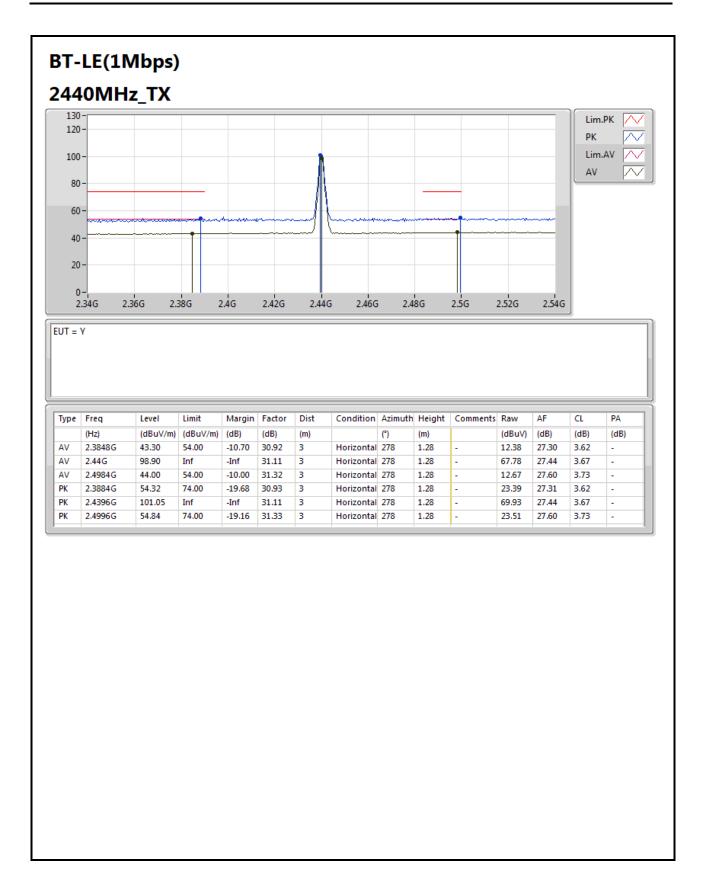
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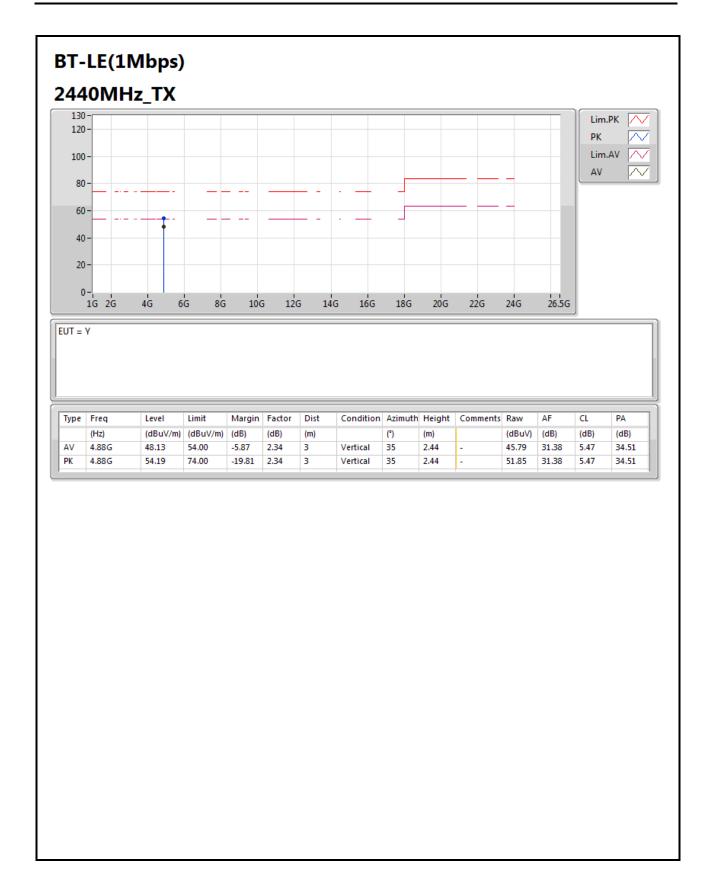
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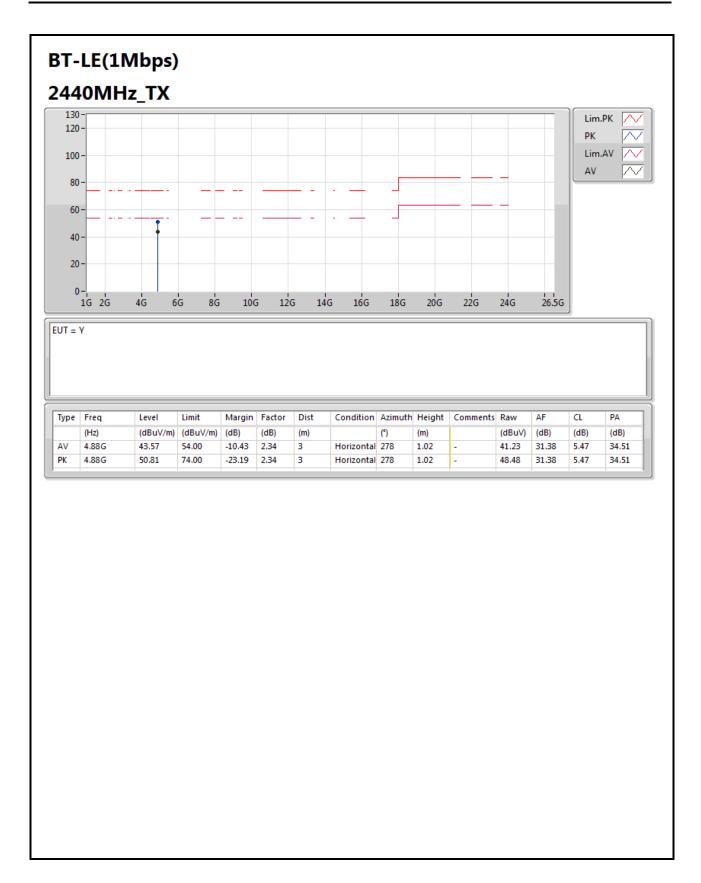
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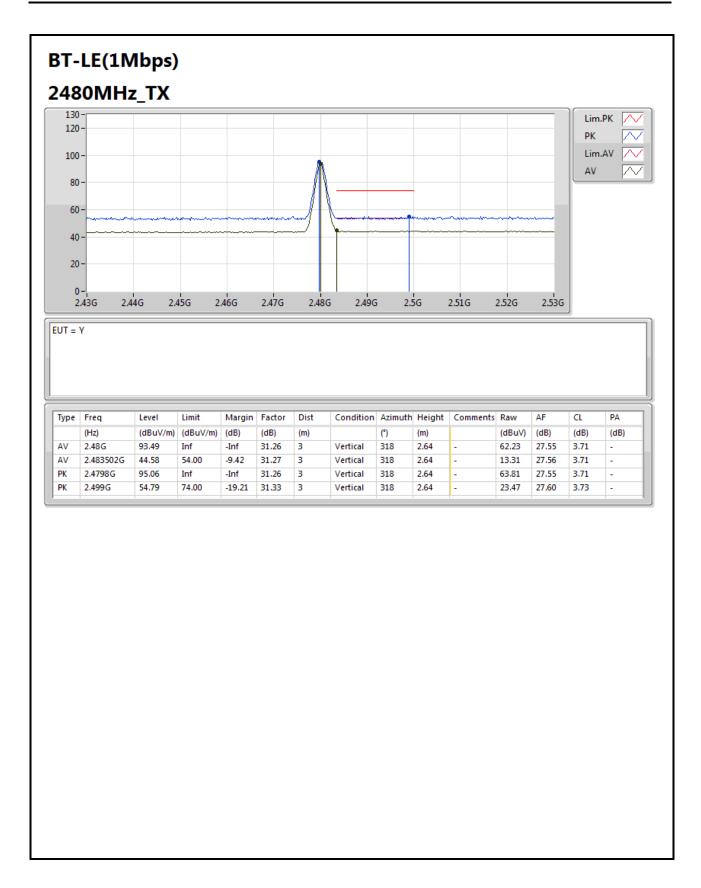
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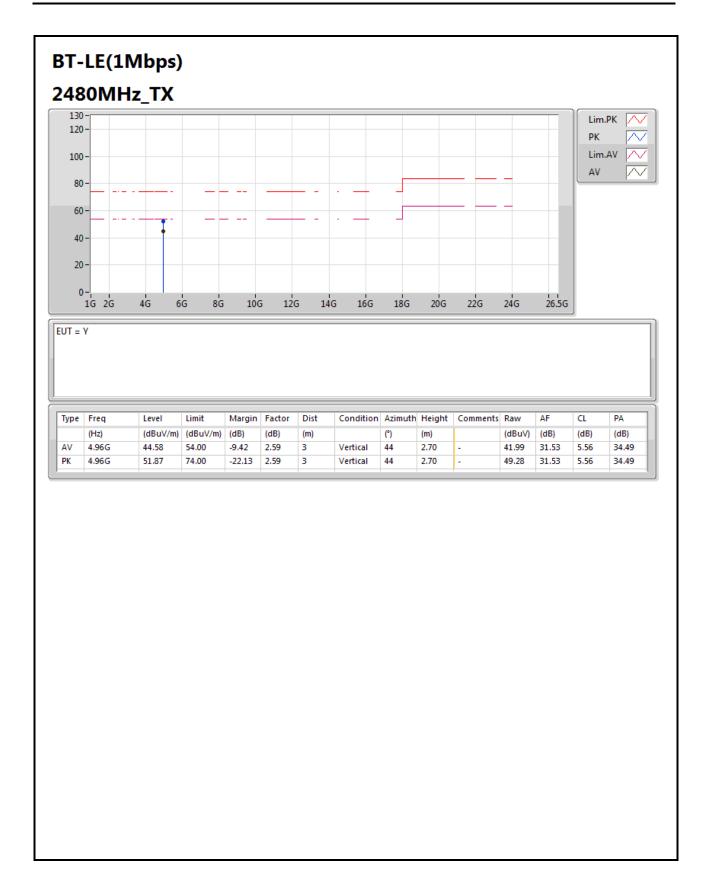
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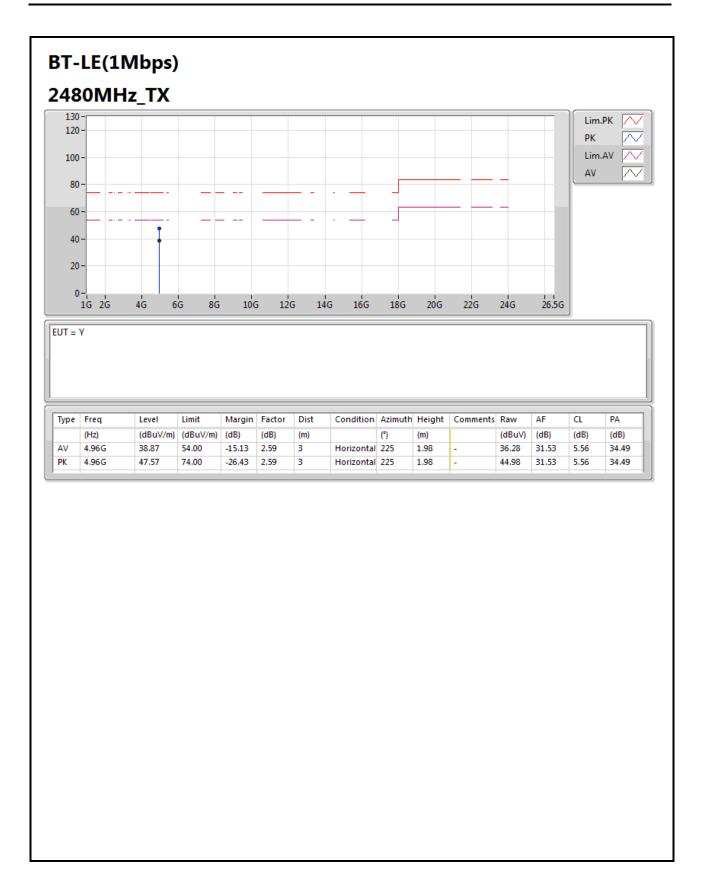
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