FCC Test Report

Equipment	:	DVR
Brand Name	:	AT&T DIRECTV
Model No.	:	HR54-700
FCC ID	:	NQ8HR54
Standard	:	47 CFR FCC Part 15.247
Operating Band	:	2400 MHz – 2483.5 MHz
Function	:	☒ Point-to-multipoint; ☐ Point-to-point
Applicant	:	ARRIS Global Limited Victoria Road, Saltaire Shipley, West Yorkshire United Kingdom BD18 3LF
Manufacturer	:	ARRIS Global Limited Victoria Road, Saltaire Shipley, West Yorkshire United Kingdom BD18 3LF

The product sample received on Oct. 17, 2017 and completely tested on Mar. 20, 2018. 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.

Cliff Chang
SPORTON INTERNATIONAL INC.

Testing Laboratory
1190

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PHOTOGRAPHS OF EUT V01

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
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

Revision History

Report No.	Version	Description	Issued Date
FR7O1724AC	Rev. 01	Initial issue of report	Jan. 18, 2018
FR7O1724AC	Rev. 02	Updated RSE results without serial port cable	Mar. 23, 2018
FR7O1724AC	Rev. 03	1.Updated the AC Conduction test result 2.Revised the AC Conduction operating mode description 3.Revised the below 1GHz operating mode description	Mar. 24, 2018
FR7O1724AC	Rev. 04	Update the company name and address of the applicant and Manufacturer	Jun. 15, 2018

1 General Description

1.1 Information

1.1.1 RF General Information

Frequency Range (MHz)	Product Type	Ch. Frequency (MHz)	Channel Number
2400-2483.5	RF4CE	2425-2475	15-25 [11]

Band	Mode	BWch (MHz)	Nant
2.4-2.4835GHz	RF4CE	5	1TX

Note:
- RF4CE use a combination of QPSK modulation.
- BWch is the nominal channel bandwidth.
- 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	Part Number	Antenna Type	Connector
1	Airgain	N2425ARHRA-245	PIFA Antenna	I-PEX
2	Airgain	N2425ARHRD-205	PIFA Antenna	I-PEX
3	-	-	Printed Antenna	-
4	-	-	Printed Antenna	-

Frequency (MHz)	Ant. 1 Gain (dBi)	Ant. 2 Gain (dBi)	Composite Gain (dBi)
2400	3.0	3.4	5.2
2410	2.9	3.4	
2420	2.7	3.4	
2430	2.5	3.4	
2440	2.7	3.3	
2450	2.8	3.4	
2460	2.9	3.5	
2470	3.1	3.5	
2480	3.4	3.6	
2490	3.5	3.6	
5150	4.3	4.0	5.7
5200	3.7	4.2	
5300	5.0	3.6	5.4
5400	5.9	4.7	
5500	5.9	4.0	5.2
5600	5.2	4.0	
5700	4.4	3.1	
5800	3.9	3.9	6.2
5850	4.2	4.2	

Frequency (MHz)	Ant. 3 Gain (dBi)	Ant. 4 Gain (dBi)
2400	3.84	3.62
2412	3.86	3.68
2424	3.86	3.65
2436	3.88	3.74
2448	3.94	3.92
2450	3.93	3.95
2460	3.79	3.84
2472	3.75	3.71
2484	3.61	3.74
2496	3.52	3.76
2500	3.50	3.77

Note: Ant. 1 ~ Ant. 2 connect to port 1 ~ port 2 for 2.4GHz and 5GHz

Ant. 3 connects to port 2 and Ant. 4 connects to port 1 for RF4CE

<For 2.4GHz function>

For IEEE 802.11b/g mode <1TX/1RX>:

The EUT supports the antenna with TX and RX diversity functions.

Both port 1 and port 2 support transmit and receive functions, but only one of them will be used at one time.

The port 2 generated the worst case, so it was selected to test and record in the report.

For IEEE 802.11n mode <2TX/2RX>:

port 1 and port 2 will transmit/receive the same signal simultaneously.

port 1 and port 2 can be used as transmitting/receiving antennas.

<For 5GHz function>

For IEEE 802.11a mode <1TX/1RX>:

The EUT supports the antenna with TX and RX diversity functions.

Both port 1 and port 2 support transmit and receive functions, but only one of them will be used at one time.

The port 2 generated the worst case, so it was selected to test and record in the report.

For IEEE 802.11an mode <2TX/2RX>:

port 1 and port 2 will transmit/receive the same signal simultaneously.

port 1 and port 2 can be used as transmitting/receiving antennas.

<For RF4CE funciton>

For RF4CE mode <1TX/1RX>:

The EUT supports the antenna with TX and RX diversity functions.

Both port 1 and port 2 support transmit and receive functions, but only one of them will be used at one time.

The port 1 generated the worst case, so it was selected to test and record in the report.

1.1.3 Mode Test Duty Cycle

Mode	DC	DCF(dB)	T(s)	VBW(Hz) ≥ 1/T
RF4CE	100%	0.000	n/a (DC>=0.98)	n/a (DC>=0.98)

1.1.4 EUT Operational Condition

EUT Power Type	From Power Adapter			
Beamforming Function	☐	With beamforming	☒	Without beamforming
Test Software Version	Tera Term Version:4.75			

1.2 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 v04
- FCC KDB 662911 D01 v02r01

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
☒	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 Radiated	TH01-CB	Ron Huang & Serway Li	20°C / 55%	Oct. 30, 2017
Radiated below 1GHz	03CH01-CB	Gino Huang & Zero Chen & Mason Chen	22°C / 54%	Mar. 20, 2018
Radiated above 1GHz	03CH01-CB	Gino Huang & Zero Chen & Mason Chen	22°C / 54%	Oct. 18, 2017 ~ Nov. 02, 2017
AC Conduction	CO01-CB	Tony Chang	24°C / 58%	Nov. 02, 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
Conducted Emission (150kHz ~ 30MHz)	3.2 dB	Confidence levels of 95%
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	9.74×10^{-8}	Confidence levels of 95%

2 Test Configuration of EUT

2.1 Test Channel Mode

Mode	Power Setting
RF4CE_Nss1_1TX	-
2425MHz	3
2450MHz	3
2475MHz	3

2.2 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	CTX
1	CTX - RF4CE (CH11, power level: 3)

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	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.

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	CTX
1	CTX - RF4CE (CH11, power level: 3)
Operating Mode > 1GHz	CTX

The Worst Case Mode for Following Conformance Tests	
Tests Item	Simultaneous Transmission Analysis - Co-location RF Exposure Evaluation
Operating Mode	
1	WLAN 2.4GHz + RF4CE
2	WLAN 5GHz + RF4CE
Refer to Sporton Test Report No.: FA7O1724 for Co-location RF Exposure Evaluation.	

Note1: The EUT can only use Z axis position.
Note2: All the specification of test configurations and test modes were based on customer's request.

2.3 EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

2.4 Accessories

Accessories			
Equipment Name	**Brand Name**	**Model Name**	**Rating**
Adapter	DIRECTV	EPS44R3-15	INPUT: 120V ~ 1.3A, 60Hz OUTPUT: 12V, 4A 48W

2.5 Support Equipment

For Test Site No: CO01-CB

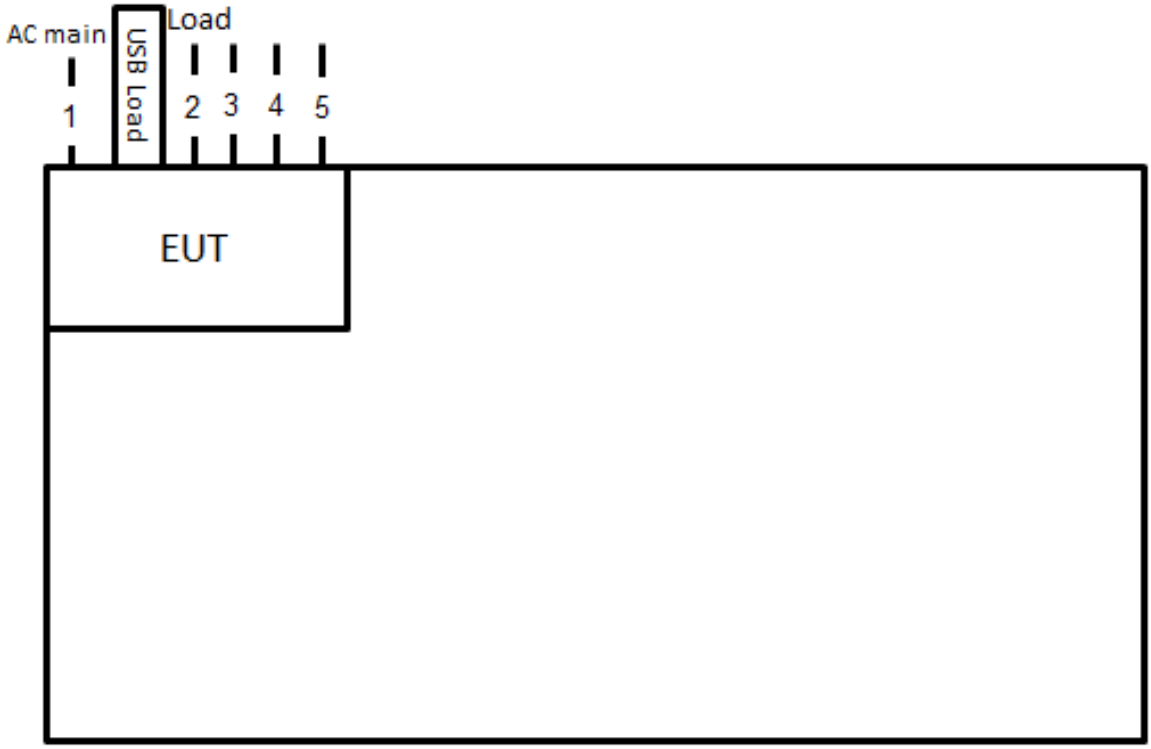
Support Equipment				
No.	**Equipment**	**Brand Name**	**Model Name**	**FCC ID**
1	Flash disk	Silicon	I-Series	DoC
2	Hard disk	Western Digital	WD10EURX-63UY4Y0	N/A

For Test Site No: 03CH01-CB and TH01-CB

Support Equipment				
No.	**Equipment**	**Brand Name**	**Model Name**	**FCC ID**
1	NB	DELL	E4300	DoC
2	Hard disk	Western Digital	WD10EURX-63UY4Y0	N/A

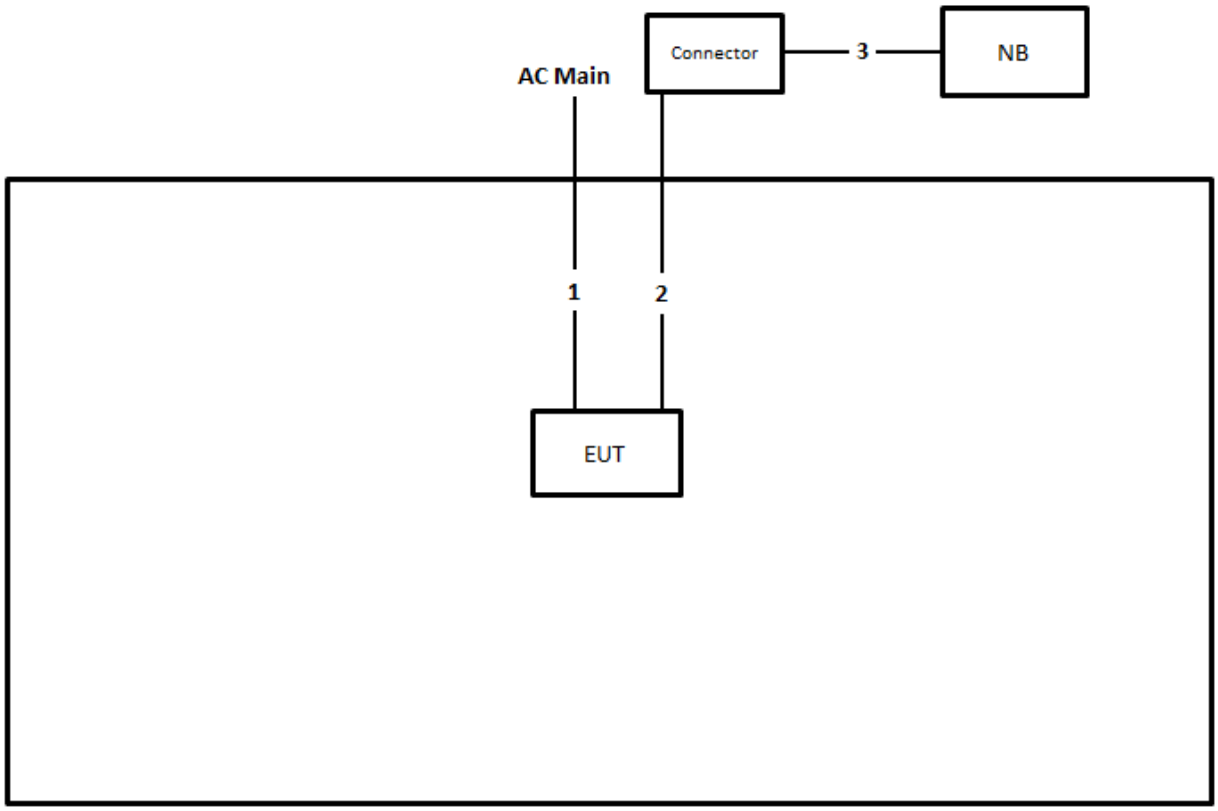
2.6 Test Setup Diagram

Test Setup Diagram – AC Line Conducted Emission Test



Item	Connection	Shielded	Length
1	Power cable	No	3.2m
2	RJ-45 cable	No	1.5m
3	HDMI cable	Yes	1.5m
4	Optical fiber	No	1.5m
5	Coaxial cable	Yes	1.5m

Test Setup Diagram - Radiated Test



Item	Connection	Shielded	Length
1	Power cable	No	3.2m
2	RS232 to USB cable	No	0.45m
3	USB cable	No	1.8m

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
Note 1: * Decreases with the logarithm of the frequency.		

3.1.2 Measuring Instruments

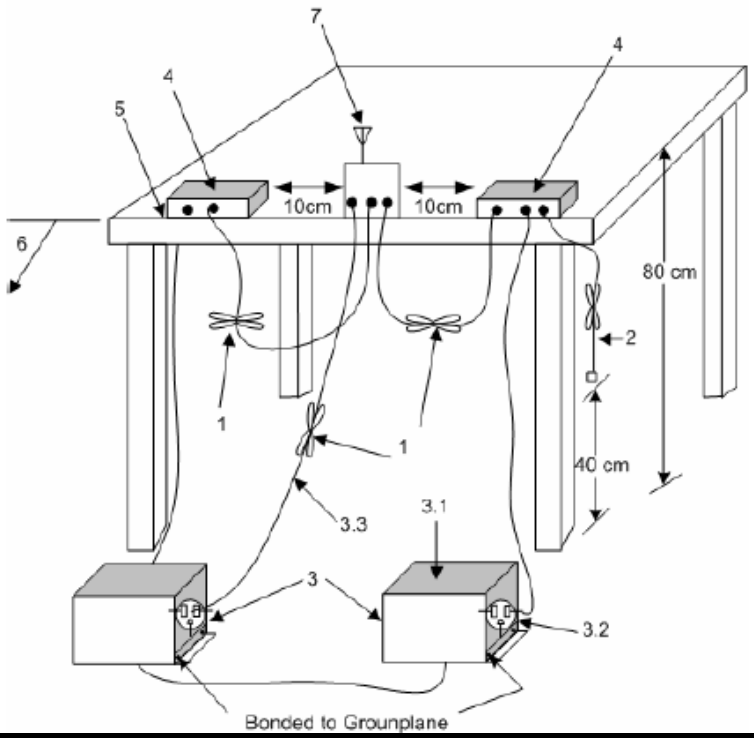
Refer a test equipment and calibration data table in this test report.

3.1.3 Test Procedures

Test Method
☒ Refer as ANSI C63.10-2013, clause 6.2 for AC power-line conducted emissions.

3.1.4 Test Setup

AC Power-line Conducted Emissions



3.1.5 Test Result of AC Power-line Conducted Emissions

Refer as Appendix A

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

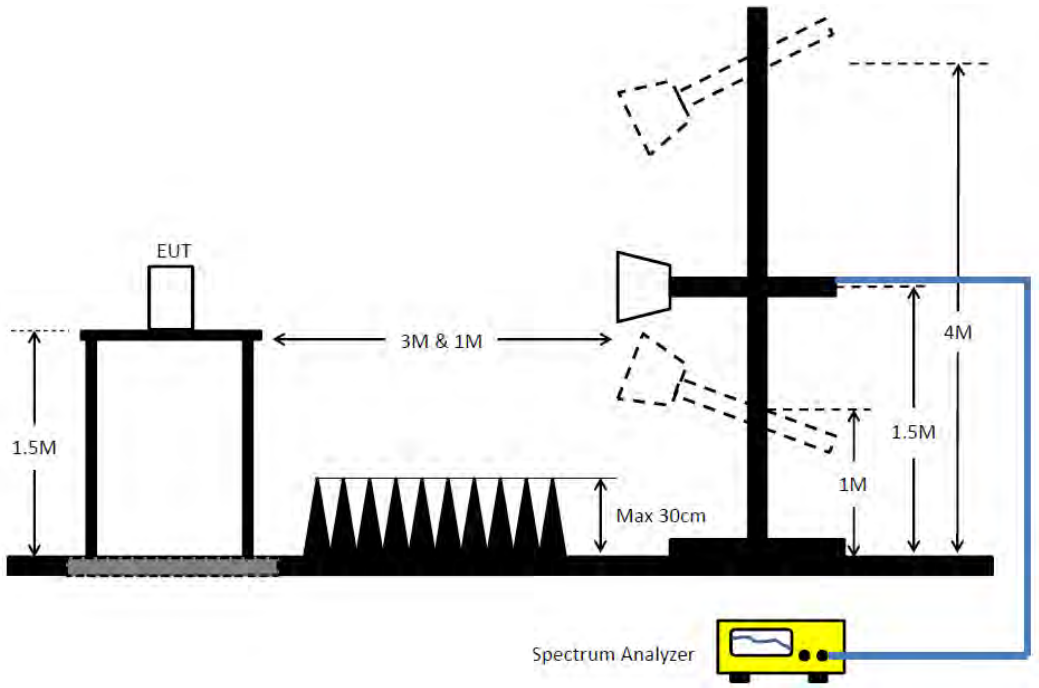
Refer a test equipment and calibration data table in this test report.

3.2.3 Test Procedures

Test Method	
▪ For the emission bandwidth shall be measured using one of the options below:	
	☒ Refer as 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.

3.2.4 Test Setup

Emission Bandwidth



3.2.5 Test Result of Emission Bandwidth

Refer as Appendix B

3.3 Maximum Conducted Output Power

3.3.1 Maximum Conducted Output Power Limit

Maximum Conducted Output Power Limit			
	▪ If $G_{TX} \leq 6$ dBi, then $P_{Out} \leq 30$ 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	
P_{Out} = maximum peak conducted output power or maximum conducted output power in dBm, **G_{TX}** = the maximum transmitting antenna directional gain in dBi.			

3.3.2 Measuring Instruments

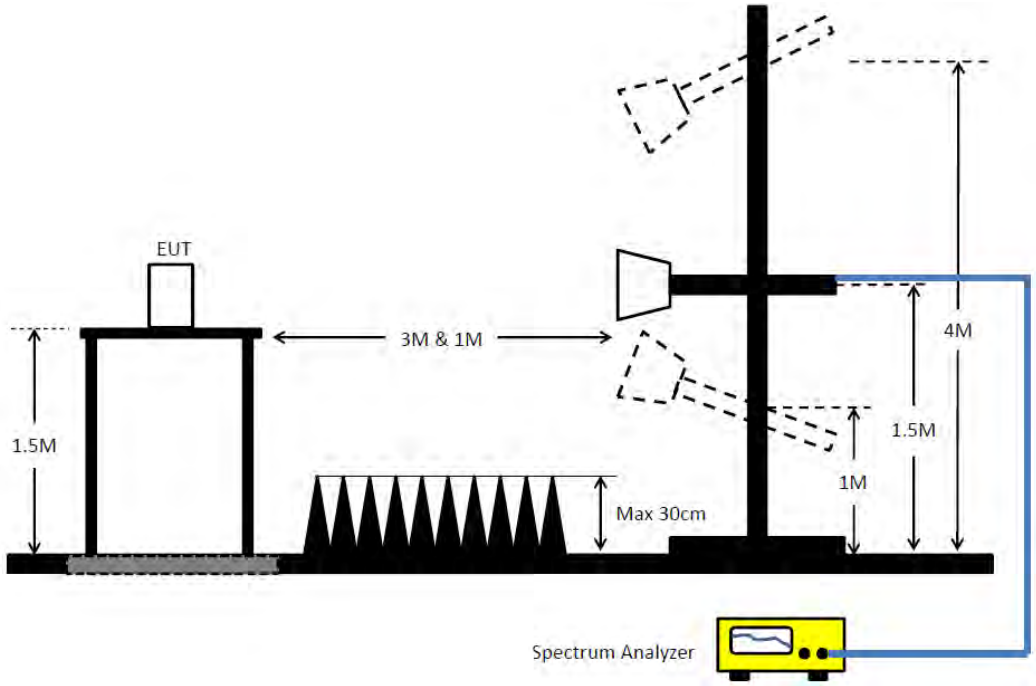
Refer a test equipment and calibration data table in this test report.

3.3.3 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).
	☐ Refer as FCC KDB 558074, clause 9.1.2 PKPM1 Peak power meter method.
▪ For Radiated measurement.	
	▪ If a radiated test configuration is used, then the measured power or field strength levels shall be converted to equivalent conducted power levels for comparison to the applicable output power limit. This may be accomplished by first measuring the radiated field strength or power levels using a methodology for maximum peak conducted power or maximum conducted (average) power as applicable and peak or average power spectral density as applicable. The radiated field strength or power level can then be converted to EIRP (see ANSI C63.10 for guidance). The equivalent conducted output power or power spectral density is then determined by subtracting the EUT transmit antenna gain (guidance applicable to devices utilizing multiple antenna technologies is provided in KDB Publication 662911) from the EIRP (assuming logarithmic representation). All calculations and parameter assumptions shall be provided in the test report.

3.3.4 Test Setup

Maximum Conducted Output Power



3.3.5 Test Result of Maximum Conducted Output Power

Refer as Appendix C

3.4 Power Spectral Density

3.4.1 Power Spectral Density Limit

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

3.4.2 Measuring Instruments

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

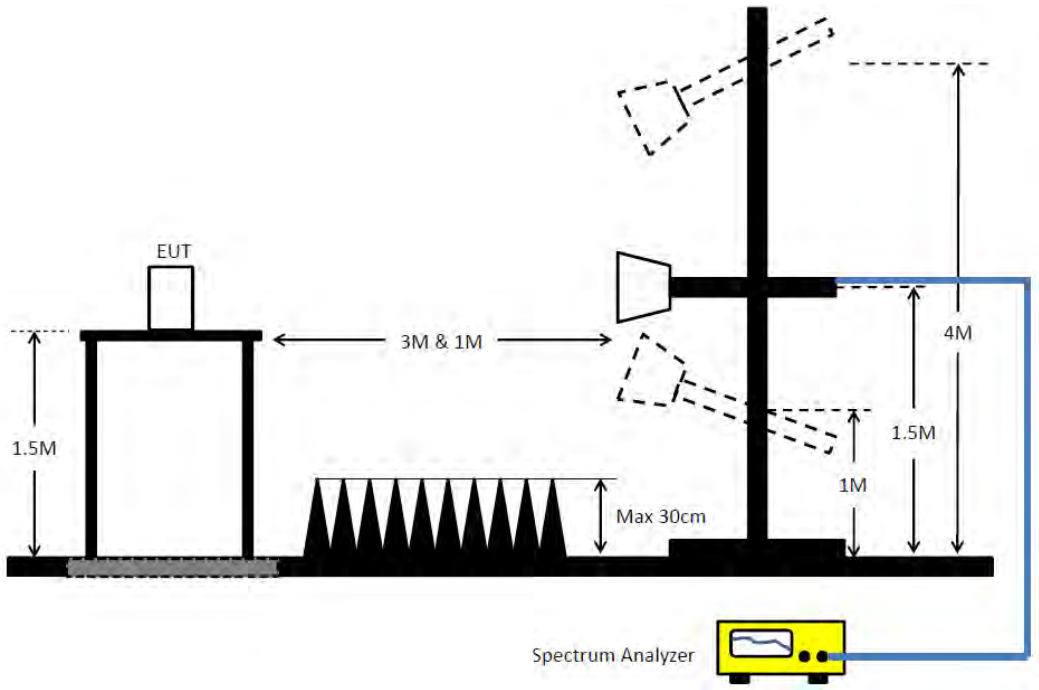
3.4.3 Test Procedures

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 FCC KDB 558074, clause 10.2 Method PKPSD (RBW=3-100kHz; Detector=peak).		
	[duty cycle ≥ 98% or external video / power trigger]		
	☐ 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 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 conducted measurement.			
	▪ If 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, 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,	
		☐ 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.	

▪	For Radiated measurement.	
		If a radiated test configuration is used, then the measured power or field strength levels shall be converted to equivalent conducted power levels for comparison to the applicable output power limit. This may be accomplished by first measuring the radiated field strength or power levels using a methodology for maximum peak conducted power or maximum conducted (average) power as applicable and peak or average power spectral density as applicable. The radiated field strength or power level can then be converted to EIRP (see ANSI C63.10 for guidance). The equivalent conducted output power or power spectral density is then determined by subtracting the EUT transmit antenna gain (guidance applicable to devices utilizing multiple antenna technologies is provided in KDB Publication 662911) from the EIRP (assuming logarithmic representation). All calculations and parameter assumptions shall be provided in the test report.

3.4.4 Test Setup

Power Spectral Density



3.4.5 Test Result of Power Spectral Density

Refer as Appendix D

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

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

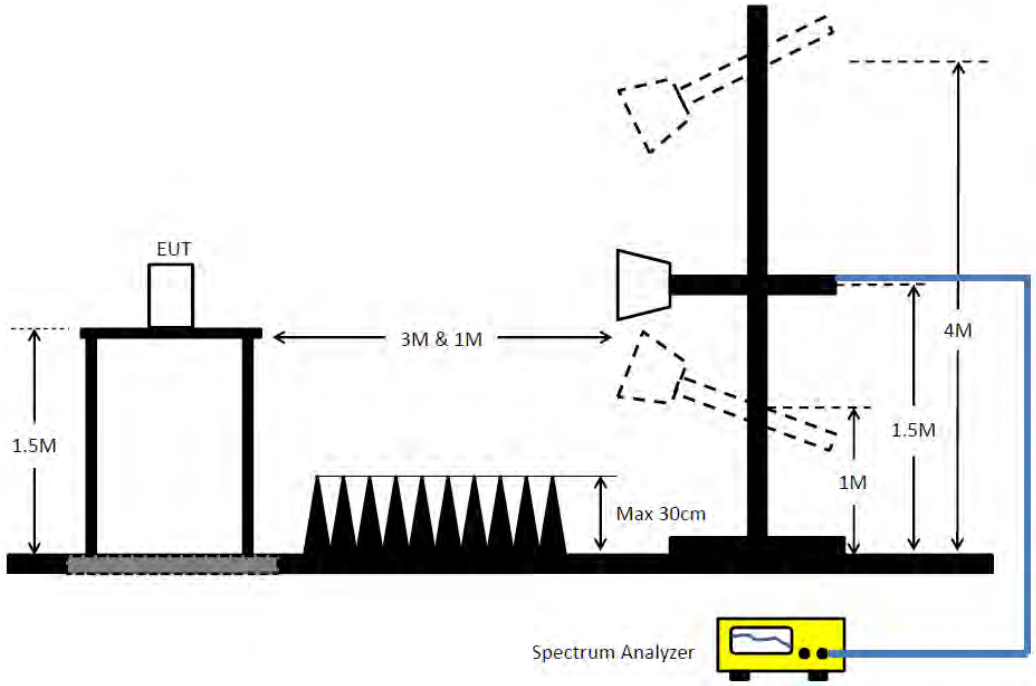
Refer a test equipment and calibration data table in this test report.

3.5.3 Test Procedures

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

3.5.4 Test Setup

Emissions in Non-restricted Frequency Bands



3.5.5 Test Result of Emissions in Non-restricted Frequency Bands

Refer as Appendix E

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 (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.

Note 3: Using the distance of 1m during the test for above 18 GHz, and the test value to correct for the distance factor at 3m.

3.6.2 Measuring Instruments

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

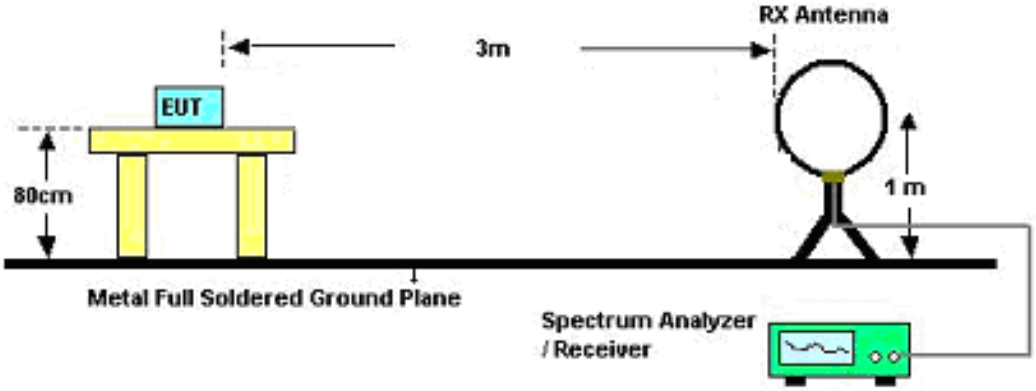
3.6.3 Test Procedures

Test Method			
▪ The average emission levels shall be measured in [duty cycle ≥ 98 or duty factor].			
▪ Refer as ANSI C63.10, clause 6.9.2.2 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:			
	▪ Refer as FCC KDB 558074, clause 12 for unwanted emissions into restricted bands.		
		☐	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.		
	▪ Refer as FCC KDB 558074, clause 13.2 (ANSI C63.10, clause 6.9.3) for marker-delta method for band-edge measurements.		
	▪ 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).		
▪ For conducted and cabinet radiation measurement, refer as FCC 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 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.		

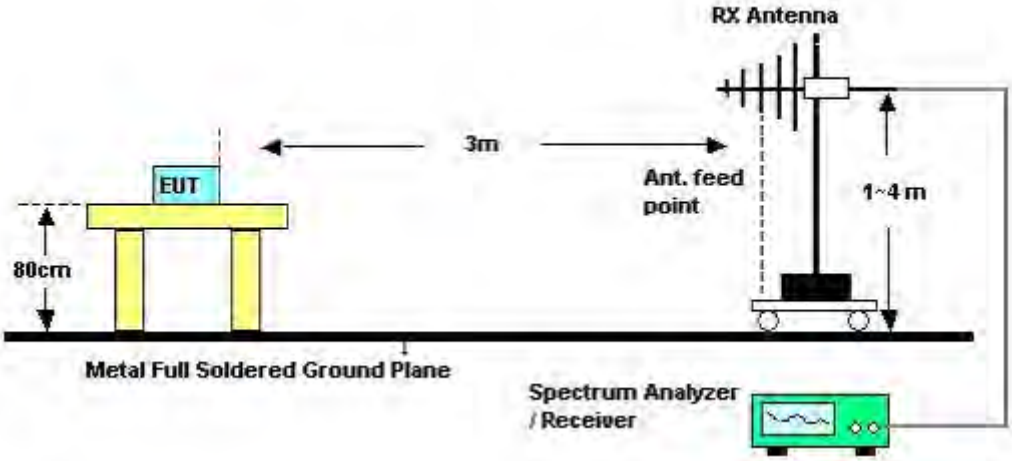
3.6.4 Test Setup

Transmitter Radiated Emissions

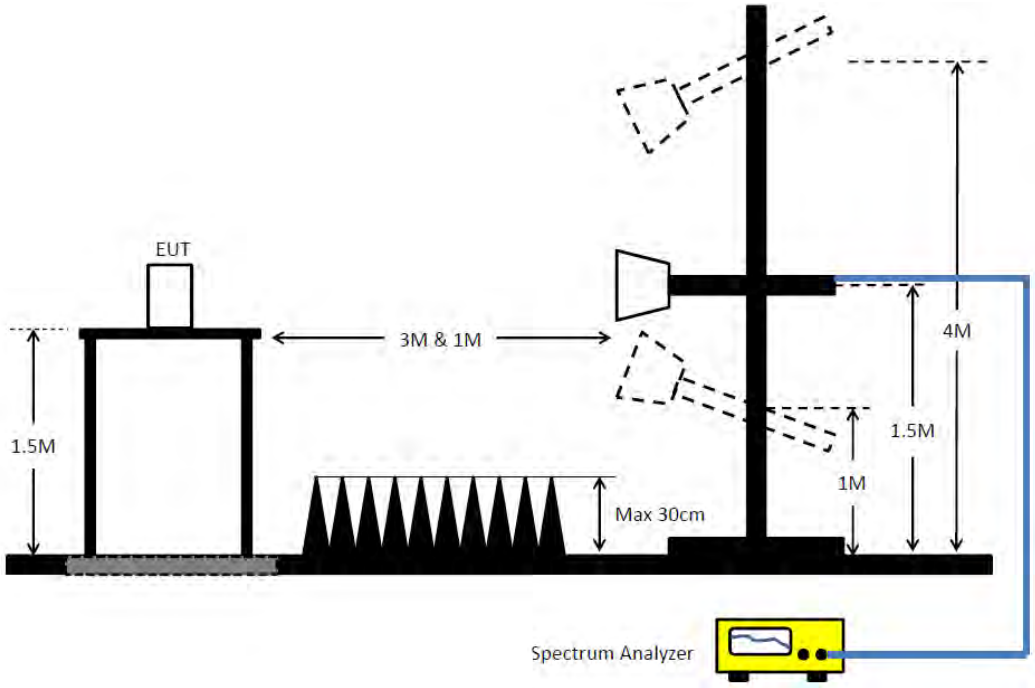
9kHz ~30MHz



30MHz~1GHz



Above 1GHz



3.6.5 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.

3.6.6 Test Result of Transmitter Radiated Unwanted Emissions

Refer as Appendix F

4 Test Equipment and Calibration Data

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date	Remark
EMI Receiver	Agilent	N9038A	My52260123	9kHz ~ 8.45GHz	Jan. 23, 2017	Jan. 22, 2018	Conduction (CO01-CB)
LISN	F.C.C.	FCC-LISN-50-16-2	04083	150kHz~100MHz	Dec. 14, 2016	Dec. 13, 2017	Conduction (CO01-CB)
LISN	Schwarzbeck	NSLK 8127	8127647	9kHz ~ 30MHz	Dec. 21, 2016	Dec. 20, 2017	Conduction (CO01-CB)
COND Cable	Woken	Cable	01	150kHz ~ 30MHz	May 23, 2017	May 22, 2018	Conduction (CO01-CB)
Software	Audix	E3	6.120210n	-	N.C.R.	N.C.R.	Conduction (CO01-CB)
BILOG ANTENNA with 6dB Attenuator	TESEQ & EMCI	CBL6112D & N-6-06	37880 & AT-N0609	20MHz ~ 2GHz	Aug. 30, 2017	Aug. 29, 2018	Radiation (03CH01-CB)
Loop Antenna	Teseq	HLA 6120	24155	9kHz - 30 MHz	Mar. 16, 2016*	Mar. 15, 2018*	Radiation (03CH01-CB
Horn Antenna	EMCO	3115	00075790	750MHz ~ 18GHz	Nov. 10, 2016	Nov. 09, 2017	Radiation (03CH01-CB)
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Jul. 05, 2017	Jul. 04, 2018	Radiation (03CH01-CB)
Pre-Amplifier	EMCI	EMC330N	980332	20MHz ~ 3GHz	May 02, 2017	May 01, 2018	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8449B	3008A02310	1GHz ~ 26.5GHz	Jan. 16, 2017	Jan. 15, 2018	Radiation (03CH01-CB)
Pre-Amplifier	MITEQ	TTA1840-35-HG	1864479	18GHz ~ 40GHz	Jul. 10, 2017	Jul. 09, 2018	Radiation (03CH01-CB)
Spectrum Analyzer	R&S	FSP40	100056	9kHz ~ 40GHz	Nov. 22, 2016	Nov. 21, 2017	Radiation (03CH01-CB)
Spectrum Analyzer	R&S	FSP40	100056	9kHz ~ 40GHz	Nov. 23, 2017	Nov. 22, 2018	Radiation (03CH01-CB)
EMI Test	R&S	ESCS	100355	9kHz ~ 2.75GHz	May 06, 2017	May 05, 2018	Radiation (03CH01-CB)
RF Cable-low	Woken	Low Cable-16+17	N/A	30 MHz ~ 1 GHz	Oct. 11, 2017	Oct. 10, 2018	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-16	N/A	1 GHz ~ 18 GHz	Oct. 11, 2017	Oct. 10, 2018	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-16+17	N/A	1 GHz ~ 18 GHz	Oct. 11, 2017	Oct. 10, 2018	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-40G#1	N/A	18GHz ~ 40 GHz	Oct. 11, 2017	Oct. 10, 2018	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-40G#2	N/A	18GHz ~ 40 GHz	Oct. 11, 2017	Oct. 10, 2018	Radiation (03CH01-CB)
Spectrum analyzer	R&S	FSV40	100979	9kHz~40GHz	Dec. 26, 2016	Dec. 25, 2017	Conducted (TH01-CB)

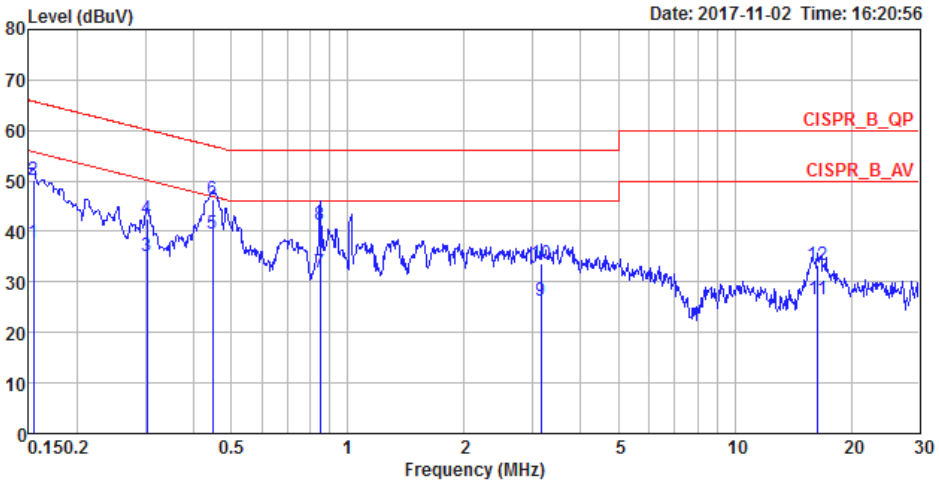
Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date	Remark
RF Cable-high	Woken	RG402	High Cable-06	1 GHz – 26.5 GHz	Oct. 11, 2017	Oct. 10, 2018	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-07	1 GHz –26.5 GHz	Oct. 11, 2017	Oct. 10, 2018	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-08	1 GHz –26.5 GHz	Oct. 11, 2017	Oct. 10, 2018	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-09	1 GHz –26.5 GHz	Oct. 11, 2017	Oct. 10, 2018	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-10	1 GHz –26.5 GHz	Oct. 11, 2017	Oct. 10, 2018	Conducted (TH01-CB)
Power Sensor	Agilent	U2021XA	MY53410001	50MHz~18GHz	Nov. 22, 2016	Nov. 21, 2017	Conducted (TH01-CB)

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

*Calibration Interval of instruments listed above is two year.

N.C.R. means Non-Calibration required.

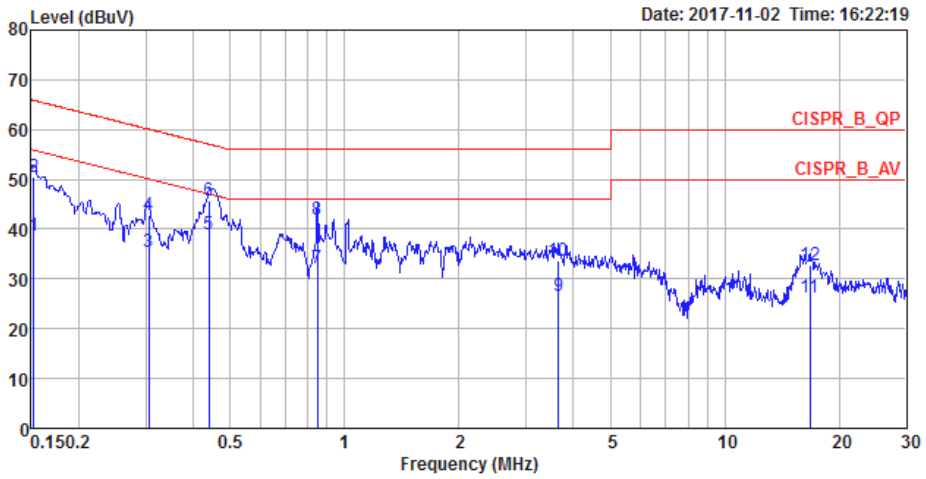
AC Power-line Conducted Emissions Result			
Operating Mode	1	**Power Phase**	Line
Operating Function	CTX - RF4CE (CH11, power level: 3)		



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark	Pol/Phase
	MHz	dBuV	dB	dBuV	dBuV	dB	dB		
1	0.1540	37.72	-18.06	55.78	27.56	10.00	0.16	Average	LINE
2	0.1540	50.21	-15.57	65.78	40.05	10.00	0.16	QP	LINE
3	0.3035	35.24	-14.91	50.15	25.25	9.93	0.06	Average	LINE
4	0.3035	42.63	-17.52	60.15	32.64	9.93	0.06	QP	LINE
5	0.4468	39.41	-7.52	46.93	29.43	9.95	0.03	Average	LINE
6	0.4468	46.36	-10.57	56.93	36.38	9.95	0.03	QP	LINE
7	0.8483	32.02	-13.98	46.00	21.90	9.96	0.16	Average	LINE
8	0.8483	41.44	-14.56	56.00	31.32	9.96	0.16	QP	LINE
9	3.1563	26.13	-19.87	46.00	16.02	9.97	0.14	Average	LINE
10	3.1563	33.63	-22.37	56.00	23.52	9.97	0.14	QP	LINE
11	16.3985	26.62	-23.38	50.00	16.17	10.26	0.19	Average	LINE
12	16.3985	33.31	-26.69	60.00	22.86	10.26	0.19	QP	LINE

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.)

AC Power-line Conducted Emissions Result			
Operating Mode	1	**Power Phase**	Neutral
Operating Function	CTX - RF4CE (CH11, power level: 3)		



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark	Pol/Phase
	MHz	dBuV	dB	dBuV	dBuV	dB	dB		
1	0.1524	38.77	-17.10	55.87	28.51	10.10	0.16	Average	NEUTRAL
2	0.1524	50.50	-15.37	65.87	40.24	10.10	0.16	QP	NEUTRAL
3	0.3051	35.39	-14.71	50.10	25.18	10.15	0.06	Average	NEUTRAL
4	0.3051	42.92	-17.18	60.10	32.71	10.15	0.06	QP	NEUTRAL
5	0.4396	39.05	-8.02	47.07	28.77	10.25	0.03	Average	NEUTRAL
6	0.4396	45.83	-11.24	57.07	35.55	10.25	0.03	QP	NEUTRAL
7	0.8483	32.21	-13.79	46.00	21.95	10.10	0.16	Average	NEUTRAL
8	0.8483	41.79	-14.21	56.00	31.53	10.10	0.16	QP	NEUTRAL
9	3.6611	26.59	-19.41	46.00	16.52	9.96	0.11	Average	NEUTRAL
10	3.6611	33.79	-22.21	56.00	23.72	9.96	0.11	QP	NEUTRAL
11	16.7497	26.25	-23.75	50.00	15.77	10.29	0.19	Average	NEUTRAL
12	16.7497	32.77	-27.23	60.00	22.29	10.29	0.19	QP	NEUTRAL

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.)

Summary

Mode	Max-N dB (Hz)	Max-OBW (Hz)	ITU-Code	Min-N dB (Hz)	Min-OBW (Hz)
RF4CE_Nss1_1TX	-	-	-	-	-
2.4-2.4835GHz	1.6M	2.405M	2M41D1D	1.531M	2.355M

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;

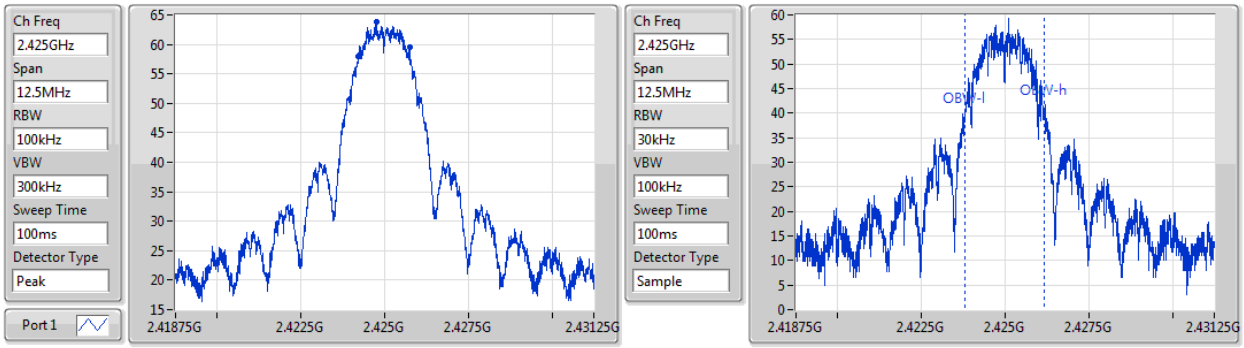
Result

Mode	Result	Limit (Hz)	Port 1-N dB (Hz)	Port 1-OBW (Hz)
RF4CE_Nss1_1TX	-	-	-	-
2425MHz	Pass	500k	1.531M	2.355M
2450MHz	Pass	500k	1.588M	2.393M
2475MHz	Pass	500k	1.6M	2.405M

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

RF4CE_Nss1_1TX **EBW**

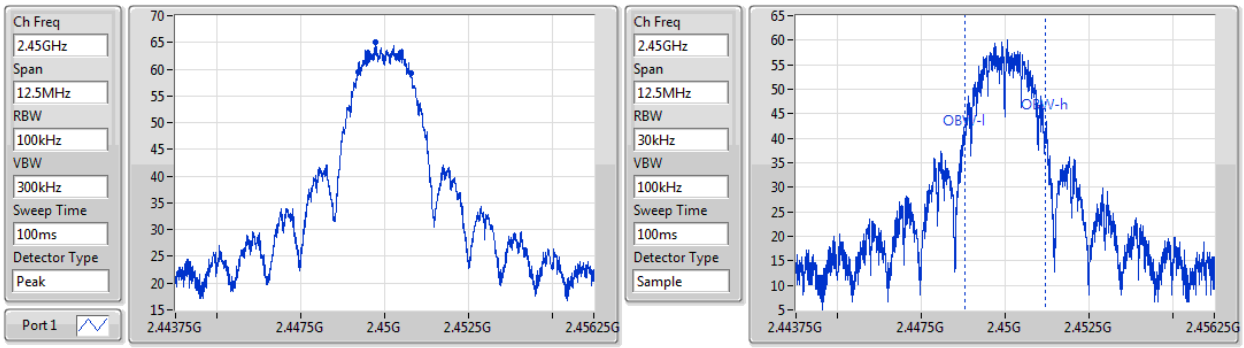
2425MHz



6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
1.531M	2.424213G	2.425744G	2.355M	2.423807G	2.426162G	500k	1

RF4CE_Nss1_1TX **EBW**

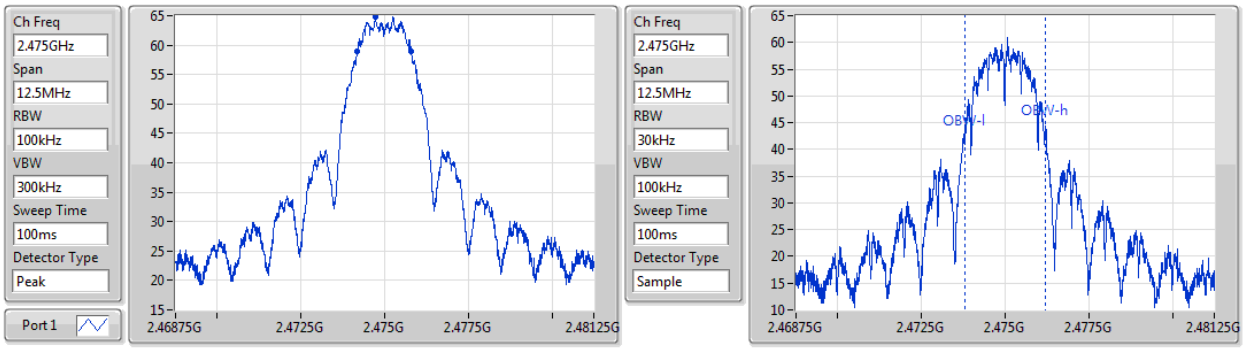
2450MHz



6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
1.588M	2.449194G	2.450781G	2.393M	2.448794G	2.451187G	500k	1

RF4CE_Nss1_1TX **EBW**

2475MHz



6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
1.6M	2.474188G	2.475788G	2.405M	2.473788G	2.476193G	500k	1

Summary

Mode	Total Power (dBm)	Total Power (W)
2.4-2.4835GHz	-	-
RF4CE	-4.41	0.000362

Result

Mode	Result	DG (dBi)	Port 1 (dBm)	Total Power (dBm)	Power Limit (dBm)
RF4CE	-	-	-	-	-
2425MHz	Pass	3.95	-5.39	-5.39	30.00
2450MHz	Pass	3.95	-4.9	-4.9	30.00
2475MHz	Pass	3.95	-4.41	-4.41	30.00

DG = Directional Gain; **Port X** = Port X output power

Summary

Mode	PD (dBm/RBW)
2.4-2.4835GHz	-
RF4CE	-14.36

RBW=3kHz.

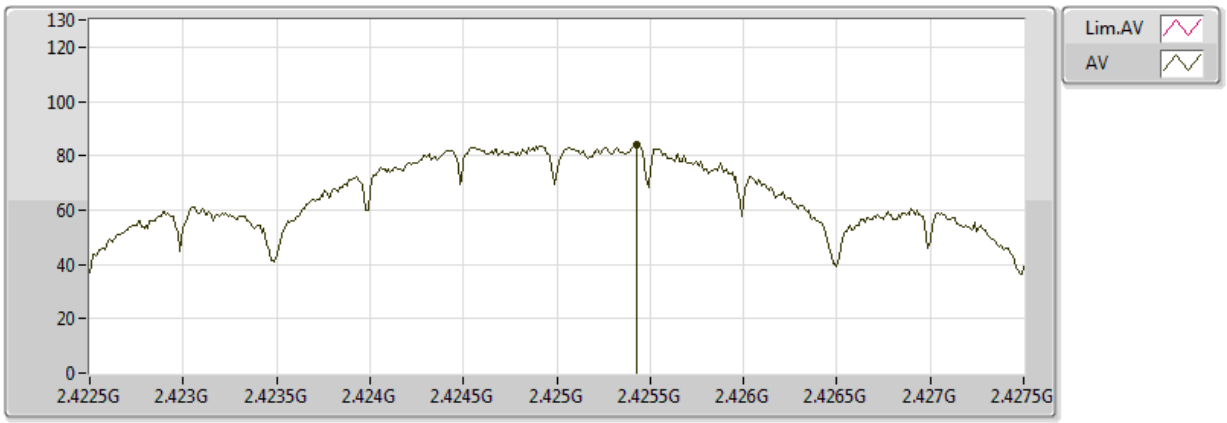
Result

Mode	Result	DG (dBi)	Port 1 (dBm/RBW)	PD (dBm/RBW)	PD Limit (dBm/RBW)
RF4CE	-	-	-	-	-
2425MHz	Pass	3.95	-15.13	-15.13	8.00
2450MHz	Pass	3.95	-14.75	-14.75	8.00
2475MHz	Pass	3.95	-14.36	-14.36	8.00

DG = Directional Gain; RBW=3kHz;
EIRP PSD refer to KDB 558074 12.2.2 e)
E (dBuV)=EIRP(dBm) - 20log D + 104.8 = EIRP(dBm) – 20log(3) +104.8 = EIRP(dBm)-95.2
PD = trace bin-by-bin of each transmits port summing can be performed maximum power density; **Port X** = Port X power density;

RF4CE_Nss1_1TX

2425MHz_TX

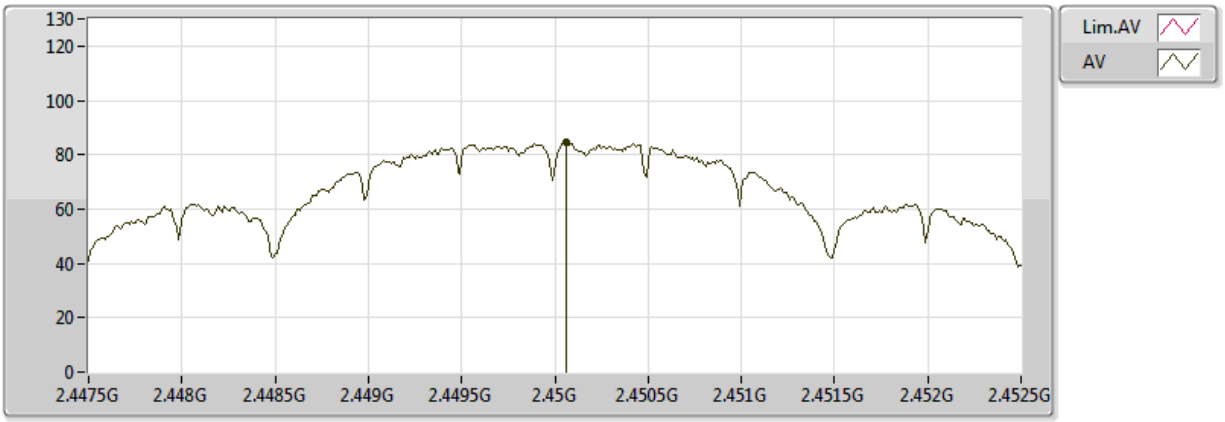


20171107
EUT Z_1TX
Setting 3
01-G-2
FSP(100056)

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)
AV	2.425429G	84.02	Inf	-Inf	30.92	3	Horizontal	82	1.12

RF4CE_Nss1_1TX

2450MHz_TX

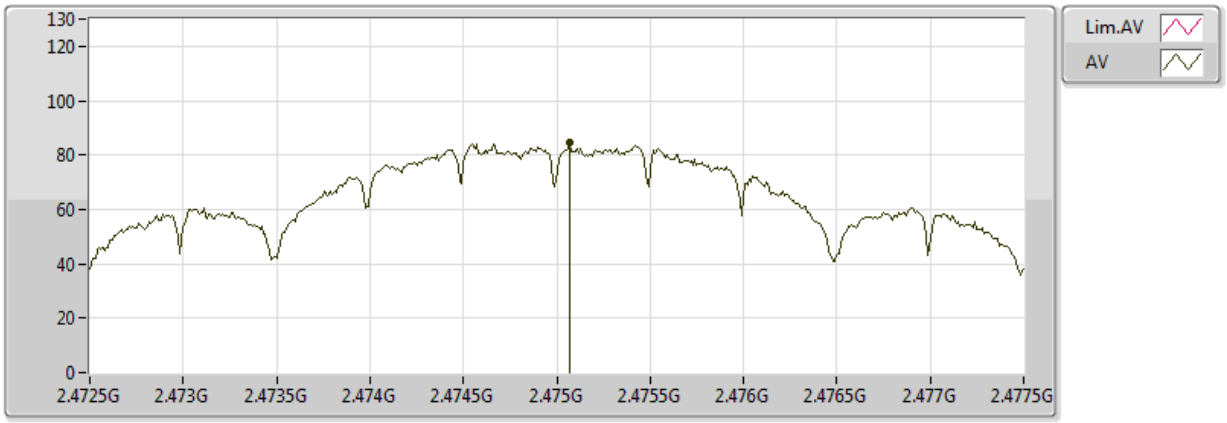


20171107
EUT Z_1TX
Setting 3
01-G-2
FSP(100056)

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)
AV	2.45006G	84.40	Inf	-Inf	30.89	3	Horizontal	67	1.07

RF4CE_Nss1_1TX

2475MHz_TX



20171107
EUT Z_1TX
Setting 3
01-G-2
FSP(100056)

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)
AV	2.47507G	84.79	Inf	-Inf	30.87	3	Horizontal	65	1.01

Summary

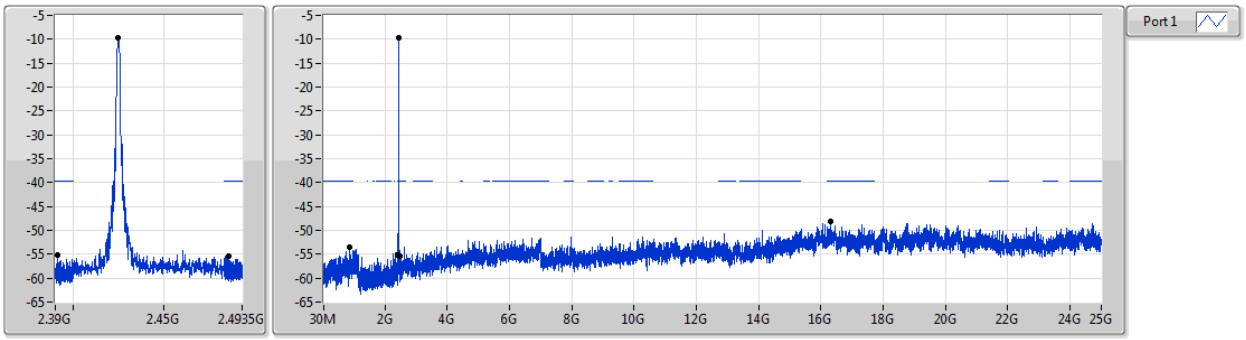
Mode	Result	Ref (Hz)	Ref (dBm)	Limit (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Port
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-	-	-	-
RF4CE_Nss1_1TX	Pass	2.424716G	-9.71	-39.71	859.54M	-53.60	2.3912G	-55.24	2.48612G	-55.44	16.295611G	-48.18	1

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
RF4CE_Nss1_1TX	-	-	-	-	-	-	-	-	-	-	-	-	-
2425MHz	Pass	2.424716G	-9.71	-39.71	859.54M	-53.60	2.3912G	-55.24	2.48612G	-55.44	16.295611G	-48.18	1
2450MHz	Pass	2.449766G	-8.98	-38.98	874.88M	-53.60	2.39488G	-55.84	2.48878G	-54.47	17.612241G	-48.51	1
2475MHz	Pass	2.475651G	-9.65	-39.65	700.24M	-54.09	2.39424G	-55.91	2.48388G	-53.80	16.250598G	-48.19	1

RF4CE_Nss1_1TX **CSE NdB**

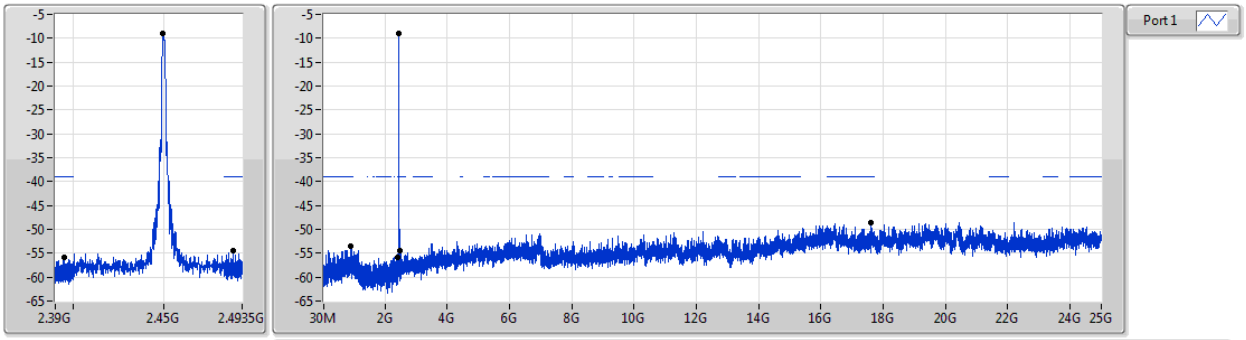
2425MHz



Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.424716G	-9.71	-39.71	859.54M	-53.60	2.3912G	-55.24	2.48612G	-55.44	16.295611G	-48.18	1

RF4CE_Nss1_1TX **CSE NdB**

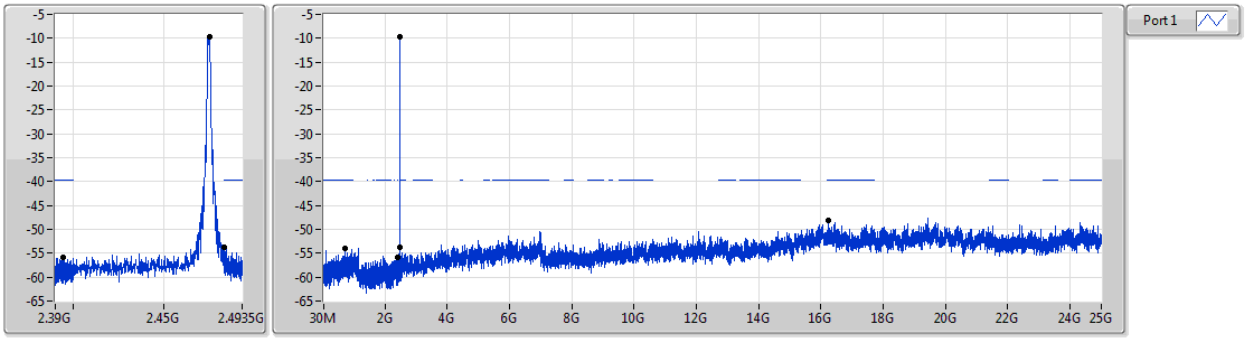
2450MHz



Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.449766G	-8.98	-38.98	874.88M	-53.60	2.39488G	-55.84	2.48878G	-54.47	17.612241G	-48.51	1

RF4CE_Nss1_1TX **CSE NdB**

2475MHz

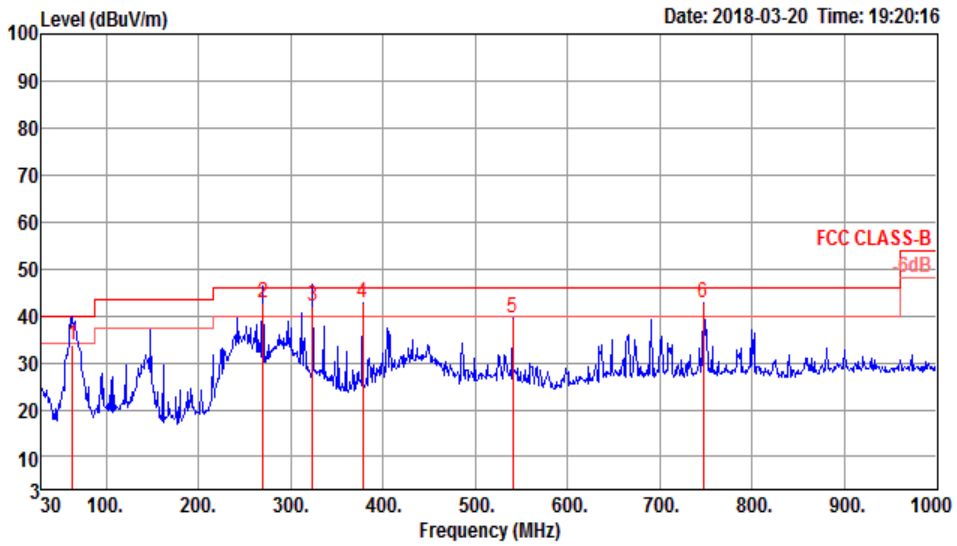


Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.475651G	-9.65	-39.65	700.24M	-54.09	2.39424G	-55.91	2.48388G	-53.80	16.250598G	-48.19	1

TEL : 886-3-327-3456

FAX : 886-3-327-0973

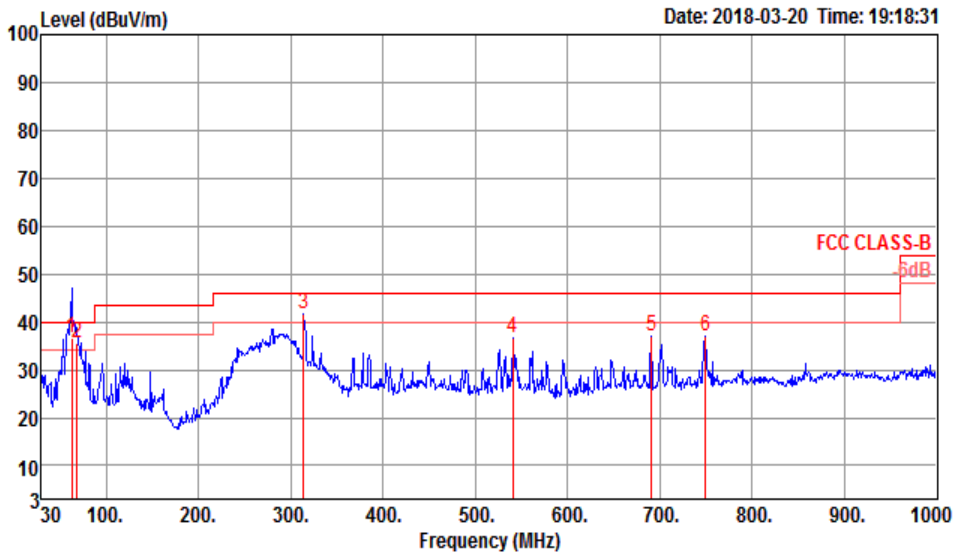
RSE below 1GHz Result			
Operating Mode	1	**Polarization**	Horizontal
Operating Function	CTX - RF4CE (CH11, power level: 3)		



	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	63.95	33.92	40.00	-6.08	51.98	1.16	12.66	31.88	300	182	QP	HORIZONTAL
2	269.59	42.64	46.00	-3.36	52.66	2.48	19.34	31.84	100	28	QP	HORIZONTAL
3	323.91	41.92	46.00	-4.08	51.32	2.00	20.40	31.80	100	202	QP	HORIZONTAL
4	378.23	42.90	46.00	-3.10	50.51	2.30	21.85	31.76	100	209	Peak	HORIZONTAL
5	540.22	39.58	46.00	-6.42	44.06	2.78	24.35	31.61	150	70	Peak	HORIZONTAL
6	746.83	42.73	46.00	-3.27	44.38	3.75	26.07	31.47	100	195	Peak	HORIZONTAL

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.)

RSE below 1GHz Result			
Operating Mode	1	**Polarization**	Vertical
Operating Function	CTX - RF4CE (CH11, power level: 3)		



	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	62.98	36.50	40.00	-3.50	54.52	1.19	12.67	31.88	100	0	QP	VERTICAL
2	68.80	35.55	40.00	-4.45	53.85	0.98	12.61	31.89	125	111	QP	VERTICAL
3	314.21	41.80	46.00	-4.20	51.25	2.25	20.11	31.81	200	185	Peak	VERTICAL
4	540.22	36.80	46.00	-9.20	41.28	2.78	24.35	31.61	100	231	Peak	VERTICAL
5	690.57	37.16	46.00	-8.84	39.85	3.34	25.48	31.51	100	319	Peak	VERTICAL
6	749.74	36.84	46.00	-9.16	38.43	3.78	26.10	31.47	150	330	Peak	VERTICAL

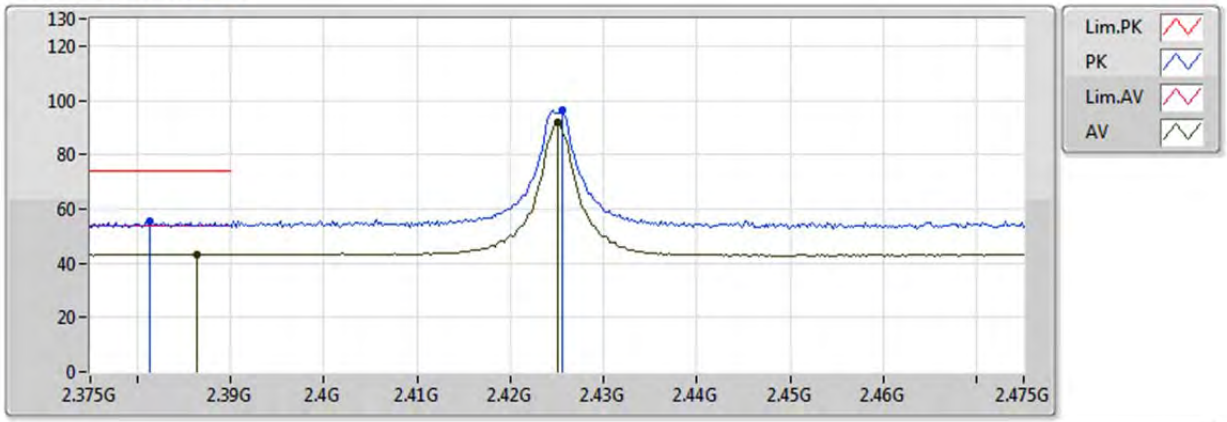
Note 1: “>20dB” means emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found emissions (No emissions were detected.)

Summary

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-	-	-
RF4CE_Nss1_1TX	Pass	AV	4.85097G	52.28	54.00	-1.72	3.31	3	Vertical	178	1.01	-

RF4CE_Nss1_1TX

2425MHz_TX

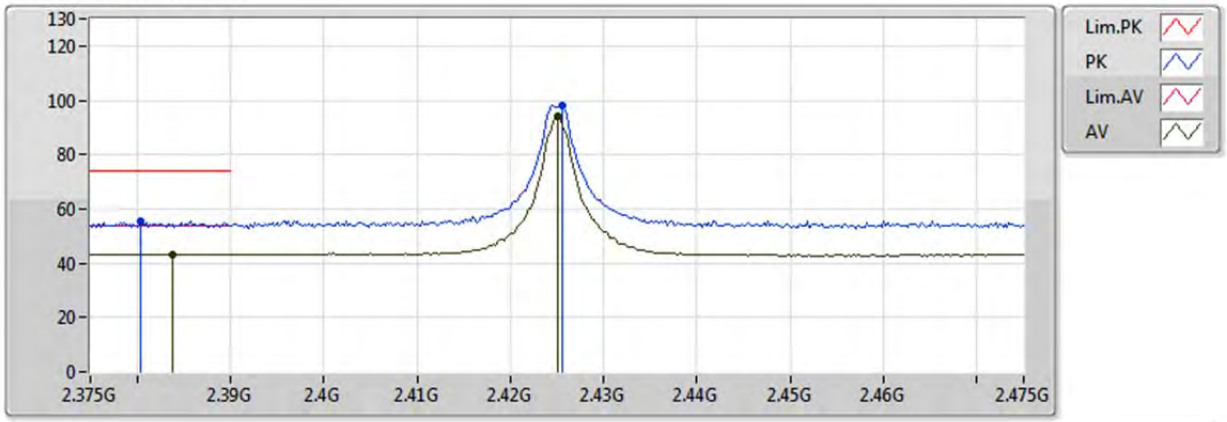


20171030
EUT Z_1TX
Setting 3
01-J-6
FSP

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)
AV	2.3864G	43.25	54.00	-10.75	31.49	3	Vertical	210	1.65
AV	2.425G	91.95	Inf	-Inf	31.45	3	Vertical	210	1.65
PK	2.3814G	55.68	74.00	-18.32	31.49	3	Vertical	210	1.65
PK	2.4256G	96.16	Inf	-Inf	31.45	3	Vertical	210	1.65

RF4CE_Nss1_1TX

2425MHz_TX

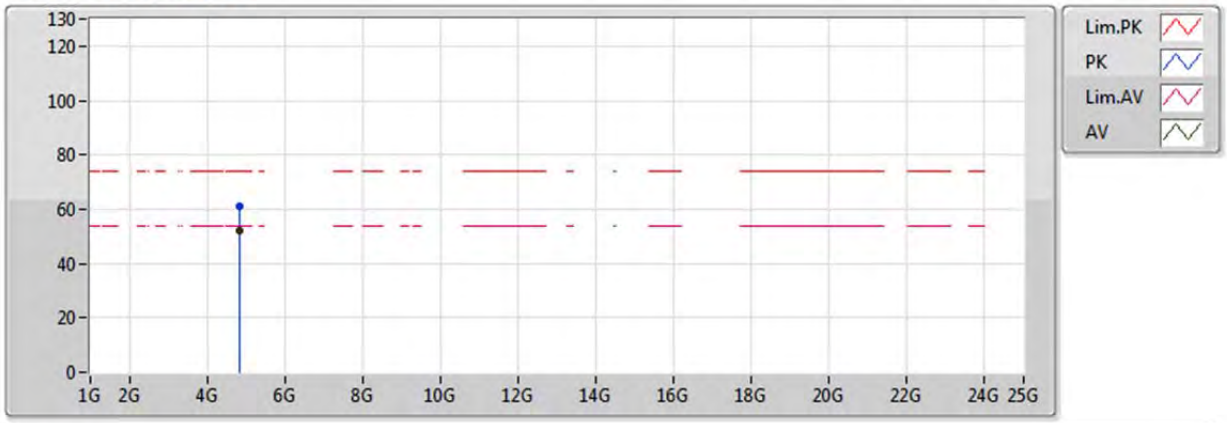


20171030
EUT Z_1TX
Setting 3
01-J-6
FSP

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)
AV	2.3838G	43.35	54.00	-10.65	31.49	3	Horizontal	22	2.59
AV	2.425G	94.06	Inf	-Inf	31.45	3	Horizontal	22	2.59
PK	2.3804G	55.31	74.00	-18.69	31.49	3	Horizontal	22	2.59
PK	2.4256G	98.22	Inf	-Inf	31.45	3	Horizontal	22	2.59

RF4CE_Nss1_1TX

2425MHz_TX

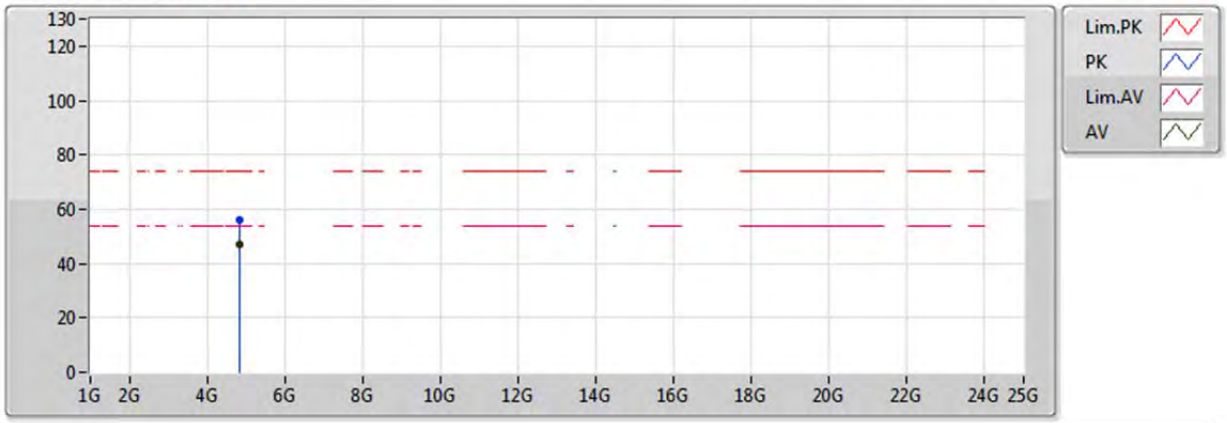


20171030
EUT Z_1TX
Setting 3
01-J-6
FSP

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)
AV	4.85097G	52.28	54.00	-1.72	3.31	3	Vertical	178	1.01
PK	4.84903G	60.98	74.00	-13.02	3.31	3	Vertical	178	1.01

RF4CE_Nss1_1TX

2425MHz_TX

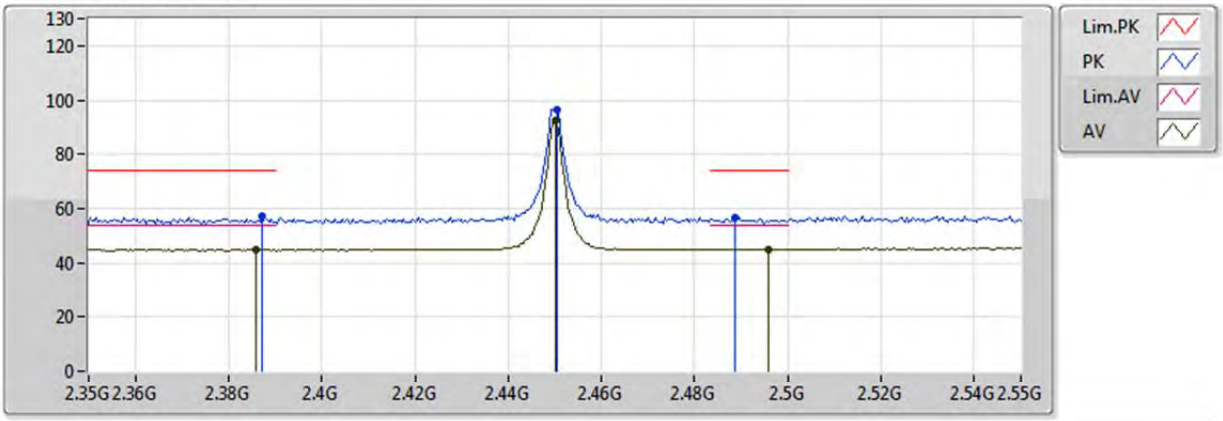


20171030
EUT Z_1TX
Setting 3
01-J-6
FSP

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)
AV	4.84898G	47.00	54.00	-7.00	3.31	3	Horizontal	94	1.15
PK	4.84896G	56.09	74.00	-17.91	3.31	3	Horizontal	94	1.15

RF4CE_Nss1_1TX

2450MHz_TX

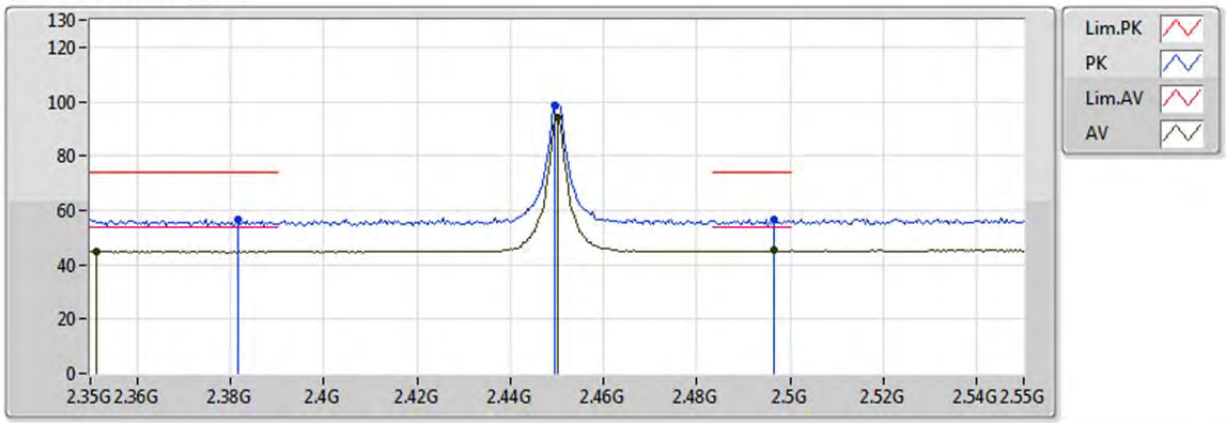


20171026
EUT Z_1TX
Setting 3
03-M-01
FSP

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)
AV	2.386G	44.85	54.00	-9.15	32.27	3	Vertical	357	1.09
AV	2.45G	92.41	Inf	-Inf	32.44	3	Vertical	357	1.09
AV	2.496G	45.03	54.00	-8.97	32.56	3	Vertical	357	1.09
PK	2.3872G	57.06	74.00	-16.94	32.28	3	Vertical	357	1.09
PK	2.4504G	96.57	Inf	-Inf	32.44	3	Vertical	357	1.09
PK	2.4888G	56.52	74.00	-17.48	32.54	3	Vertical	357	1.09

RF4CE_Nss1_1TX

2450MHz_TX

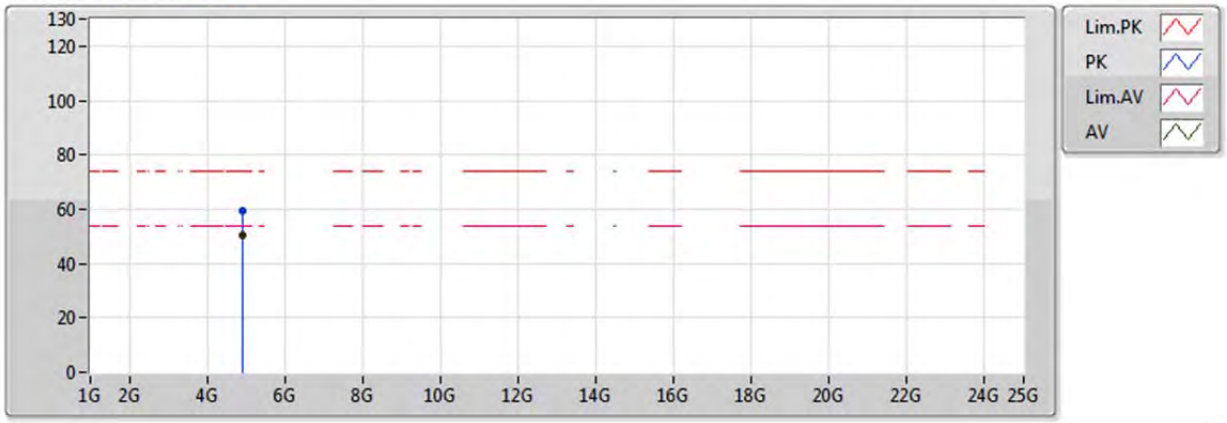


20171026
EUT Z_1TX
Setting 3
03-M-01
FSP

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)
AV	2.3512G	44.80	54.00	-9.20	32.19	3	Horizontal	68	1.38
AV	2.45G	94.25	Inf	-Inf	32.44	3	Horizontal	68	1.38
AV	2.4964G	45.14	54.00	-8.86	32.56	3	Horizontal	68	1.38
PK	2.3816G	56.44	74.00	-17.56	32.26	3	Horizontal	68	1.38
PK	2.4496G	98.40	Inf	-Inf	32.44	3	Horizontal	68	1.38
PK	2.4964G	56.77	74.00	-17.23	32.56	3	Horizontal	68	1.38

RF4CE_Nss1_1TX

2450MHz_TX

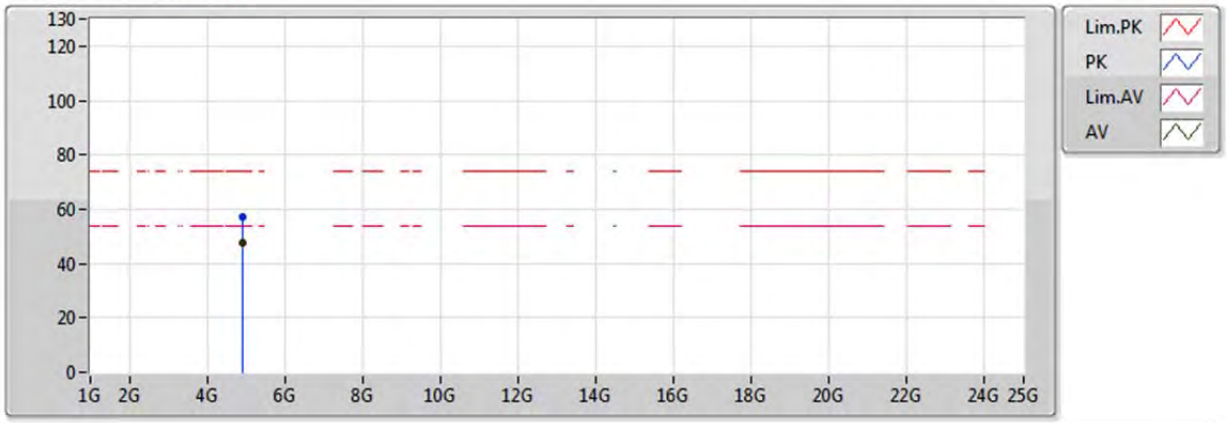


20171026
EUT Z_1TX
Setting 3
03-M-01
FSP

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)
AV	4.89898G	50.28	54.00	-3.72	5.34	3	Vertical	171	1.02
PK	4.899G	59.16	74.00	-14.84	5.34	3	Vertical	171	1.02

RF4CE_Nss1_1TX

2450MHz_TX

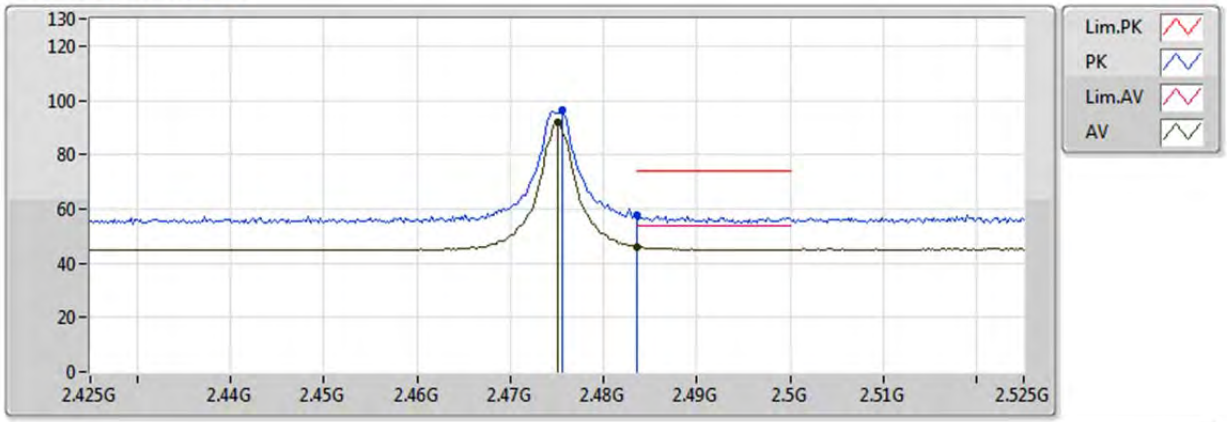


20171026
EUT Z_1TX
Setting 3
03-M-01
FSP

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)
AV	4.90092G	47.66	54.00	-6.34	5.34	3	Horizontal	109	1.17
PK	4.89886G	56.93	74.00	-17.07	5.33	3	Horizontal	109	1.17

RF4CE_Nss1_1TX

2475MHz_TX

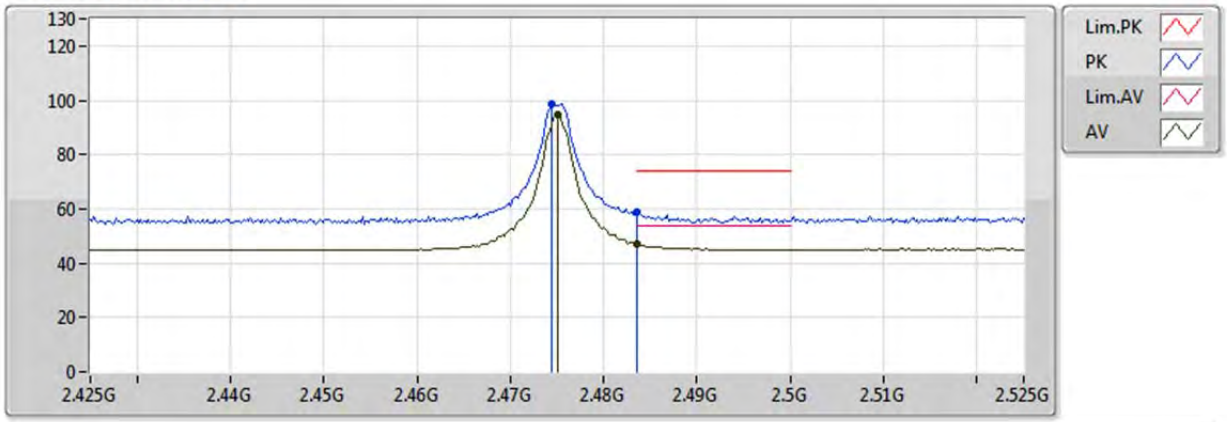


20171026
EUT Z_1TX
Setting 3
03-M-01
FSP

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)
AV	2.475G	92.04	Inf	-Inf	32.50	3	Vertical	358	1.43
AV	2.483502G	46.15	54.00	-7.85	32.53	3	Vertical	358	1.43
PK	2.4756G	96.13	Inf	-Inf	32.51	3	Vertical	358	1.43
PK	2.483502G	57.91	74.00	-16.09	32.53	3	Vertical	358	1.43

RF4CE_Nss1_1TX

2475MHz_TX

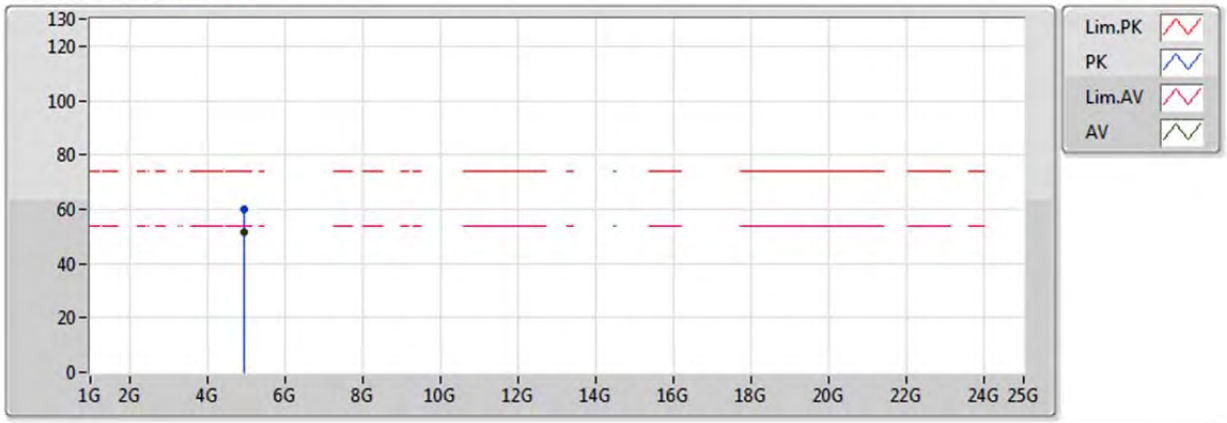


20171026
EUT Z_1TX
Setting 3
03-M-01
FSP

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)
AV	2.475G	94.74	Inf	-Inf	32.50	3	Horizontal	71	1.50
AV	2.483502G	47.12	54.00	-6.88	32.53	3	Horizontal	71	1.50
PK	2.4744G	98.79	Inf	-Inf	32.50	3	Horizontal	71	1.50
PK	2.483502G	58.78	74.00	-15.22	32.53	3	Horizontal	71	1.50

RF4CE_Nss1_1TX

2475MHz_TX

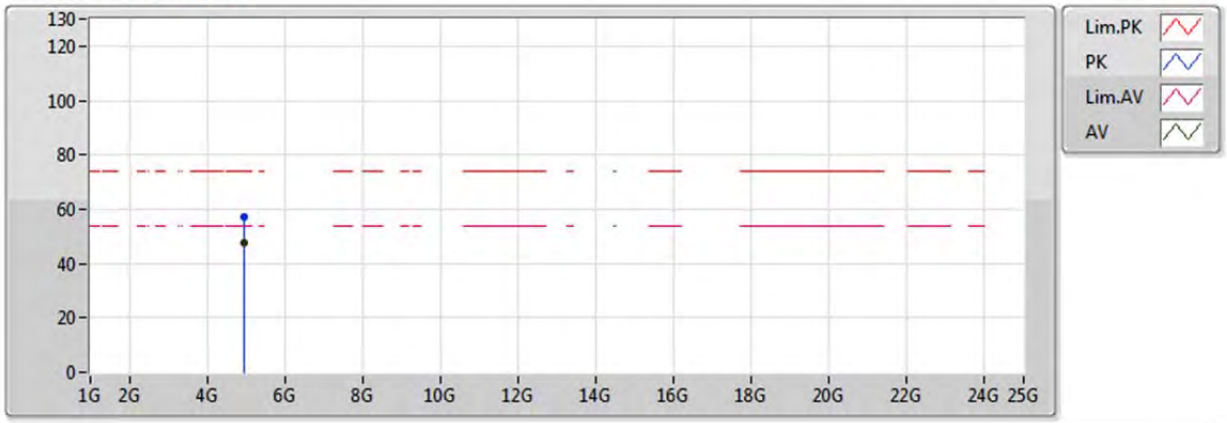


20171026
EUT Z_1TX
Setting 3
03-M-01
FSP

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)
AV	4.95094G	51.32	54.00	-2.68	5.57	3	Vertical	164	1.05
PK	4.94904G	60.00	74.00	-14.00	5.56	3	Vertical	164	1.05

RF4CE_Nss1_1TX

2475MHz_TX



20171026
EUT Z_1TX
Setting 3
03-M-01
FSP

Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)
AV	4.94894G	47.87	54.00	-6.13	5.56	3	Horizontal	87	1.00
PK	4.95102G	57.04	74.00	-16.96	5.57	3	Horizontal	87	1.00