FCC RADIO TEST REPORT

FCC ID	:	**UZ7RE40**
Equipment	:	**RFID Module**
Brand Name	:	**Zebra**
Model Name	:	**RE40**
Applicant	:	**Zebra Technologies Corporation 1 Zebra Plaza, Holtsville, NY 11742**
Manufacturer	:	**Zebra Technologies Corporation 1 Zebra Plaza, Holtsville, NY 11742**
Standard	:	**FCC Part 15 Subpart C §15.247**

The product was received on May 28, 2020 and testing was started from May 26, 2020 and completed on Jul. 04, 2020. We, SPORTON INTERNATIONAL INC., EMC & Wireless Communications Laboratory, would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in 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. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full.

Louis Wu

Approved by: Louis Wu

SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory

No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)

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History of this test report

Report No.	Version	Description	Issued Date
FR051819	01	Initial issue of report	Jul. 15. 2020

Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
3.1	15.247(a)(1)	Number of Channels	Pass	-
3.2	15.247(a)(1)	Hopping Channel Separation	Pass	-
3.3	15.247(a)(1)	Dwell Time of Each Channel	Pass	-
3.4	15.247(a)(1)	20dB Bandwidth	Pass	-
3.4	2.1049	99% Occupied Bandwidth	Reporting Only	-
3.5	15.247(b)(1)	Output Power	Pass	-
3.6	15.247(d)	Conducted Band Edges	Pass	-
3.7	15.247(d)	Conducted Spurious Emission	Pass	-
3.8	15.247(d)	Radiated Band Edges and Radiated Spurious Emission	Pass	Under limit 3.15 dB at 2781.750 MHz
3.9	15.207	AC Conducted Emission	Pass	Under limit 13.71 dB at 0.388MHz
3.10	15.203 & 15.247(b)	Antenna Requirement	Pass	-

Declaration of Conformity:
The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.
Comments and Explanations:
The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

Reviewed by: Wii Chang

Report Producer: Dara Chiu

1 General Description

1.1 Product Feature of Equipment Under Test

Product Feature	
Equipment	RFID Module
Brand Name	Zebra
Model Name	RE40
FCC ID	UZ7RE40
Sample 1	EUT with carrier board
Sample 2	Only the shielded module
EUT supports Radios application	UHF RFID
HW Version	DV
FW Version	CAAFBS00-001-N12D0 (3.0.10.0)
MFD	6-May-20
EUT Stage	Identical Prototype

Remark: The above EUT's information was declared by manufacturer.

Specification of Accessories				
Adapter	**Brand Name**	Zebra	**Part Number**	PWR-WUA5V12W0WW
Micro USB Cable (power supply)	**Brand Name**	USI	**Part Number**	54-286614-01
Micro USB Cable (data transmission)	**Brand Name**	USI	**Part Number**	54-286510-01
Development Kit Radio Engine	**Brand Name**	Zebra	**Part Number**	DKRE-4000-00WW
Antenna 1	**Model Name**	AN480		
		AN610		
		AN620		
		AN710		
		AN720		
		AN510		
		AN440		
		S9025PL; S9025PR		
Antenna 2	**Model Name**	P1046176-01/ P1092482-01/ P1113980-01		

Supported Unit Used in Test Configuration and System				
carrier board without swith	**Brand Name**	Zebra	**Part Number**	N/A

1.2 Product Specification of Equipment Under Test

Standards-related Product Specification	
Tx/Rx Frequency Range	902.75 MHz ~ 927.25 MHz
Number of Channels	50
Maximum Output Power to Antenna	**Sample 1 (DKRE Port 1):** 27.22 dBm (0.5272 W) **Sample 1 (DKRE Port 2) :** 27.09 dBm (0.5117 W) **Sample 2:** 27.20 dBm (0.5248 W)
Antenna Type / Gain	<Ant. 1>: Patch Antenna gain 6 dBi <Ant. 2>: Loop Antenna gain -30 dBi
Type of Modulation	ASK

1.3 Modification of EUT

No modifications are made to the EUT during all test items.

1.4 Testing Location

Test Site	SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory		
Test Site Location	No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.) TEL: +886-3-327-3456 FAX: +886-3-328-4978		
Test Site No.	**Sporton Site No.**		
	TH05-HY	CO05-HY	03CH07-HY

Note: The test site complies with ANSI C63.4 2014 requirement.

FCC designation No.: TW1190

1.5 Applicable Standards

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

- FCC Part 15 Subpart C §15.247
- FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v05r01
- FCC KDB 414788 D01 Radiated Test Site v01r01
- ANSI C63.10-2013

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. The TAF code is not including all the FCC KDB listed without accreditation.
3. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.

2 Test Configuration of Equipment Under Test

2.1 Carrier Frequency Channel

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
902.75-927.25 MHz	0	902.75	27	916.25
	1	903.25	28	916.75
	2	903.75	29	917.25
	3	904.25	30	917.75
	4	904.75	31	918.25
	5	905.25	32	918.75
	6	905.75	33	919.25
	7	906.25	34	919.75
	8	906.75	35	920.25
	9	907.25	36	920.75
	10	907.75	37	921.25
	11	908.25	38	921.75
	12	908.75	39	922.25
	13	909.25	40	922.75
	14	909.75	41	923.25
	15	910.25	42	923.75
	16	910.75	43	924.25
	17	911.25	44	924.75
	18	911.75	45	925.25
	19	912.25	46	925.75
	20	912.75	47	926.25
	21	913.25	48	926.75
	22	913.75	49	927.25
	23	914.25		
	24	914.75		
	25	915.25		
	26	915.75		

2.2 Test Mode

a. The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conduction emission (150 kHz to 30 MHz), radiation emission (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower).

b. AC power line Conducted Emission was tested under maximum output power.

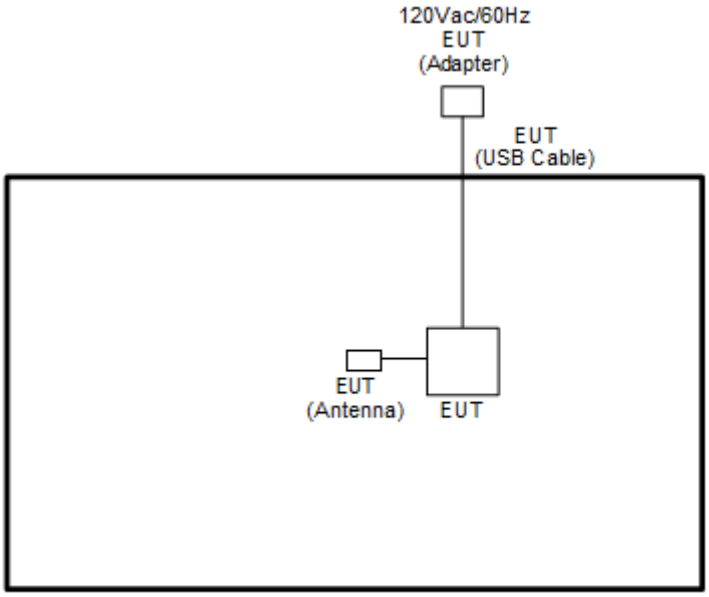
The following summary table is showing all test modes to demonstrate in compliance with the standard.

Summary table of Test Cases	
Test Item	**UHF RFID**
Conducted Test Cases	Mode 1: UHF RFID Tx CH00_902.75 MHz for Sample 1 (DKRE Port 1)
	Mode 2: UHF RFID Tx CH24_914.75 MHz for Sample 1 (DKRE Port 1)
	Mode 3: UHF RFID Tx CH49_927.25 MHz for Sample 1 (DKRE Port 1)
	Mode 4: UHF RFID Tx CH00_902.75 MHz for Sample 1 (DKRE Port 2)
	Mode 5: UHF RFID Tx CH24_914.75 MHz for Sample 1 (DKRE Port 2)
	Mode 6: UHF RFID Tx CH49_927.25 MHz for Sample 1 (DKRE Port 2)
	Mode 7: UHF RFID Tx CH00_902.75 MHz for Sample 2
	Mode 8: UHF RFID Tx CH24_914.75 MHz for Sample 2
	Mode 9: UHF RFID Tx CH49_927.25 MHz for Sample 2
Radiated Test Cases	Mode 1: UHF RFID Tx CH00_902.75 MHz+ Antenna 1 (DKRE Port 1) + DKRE for Sample 1
	Mode 2: UHF RFID Tx CH24_914.75 MHz + Antenna 1 (DKRE Port 1) + DKRE for Sample 1
	Mode 3: UHF RFID Tx CH49_927.25 MHz + Antenna 1 (DKRE Port 1) + DKRE for Sample 1
	Mode 4: UHF RFID Tx CH49_927.25 MHz + Antenna 1 (DKRE Port 2) + DKRE for Sample 1
	Mode 5: UHF RFID Tx CH00_902.75 MHz + Antenna 2 (DKRE Port 1) + DKRE for Sample 1
	Mode 6: UHF RFID Tx CH24_914.75 MHz + Antenna 2 (DKRE Port 1) + DKRE for Sample 1
	Mode 7: UHF RFID Tx CH49_927.25 MHz + Antenna 2 (DKRE Port 1) + DKRE for Sample 1
	Mode 8: UHF RFID Tx CH24_914.75 MHz + Antenna 2 (DKRE Port 2) + DKRE for Sample 1
	Mode 9: UHF RFID Tx CH00_902.75 MHz + Antenna 1 + DKRE + Carrier board for Sample 2
	Mode 10: UHF RFID Tx CH24_914.75 MHz + Antenna 1 + DKRE + Carrier board for Sample 2
	Mode 11: UHF RFID Tx CH49_927.25 MHz + Antenna 1 + DKRE + Carrier board for Sample 2
	Mode 12: UHF RFID Tx CH00_902.75 MHz + Antenna 2 + DKRE + Carrier board for Sample 2
	Mode 13: UHF RFID Tx CH24_914.75 MHz + Antenna 2 + DKRE + Carrier board for Sample 2
	Mode 14: UHF RFID Tx CH49_927.25 MHz + Antenna 2 + DKRE + Carrier board for Sample 2

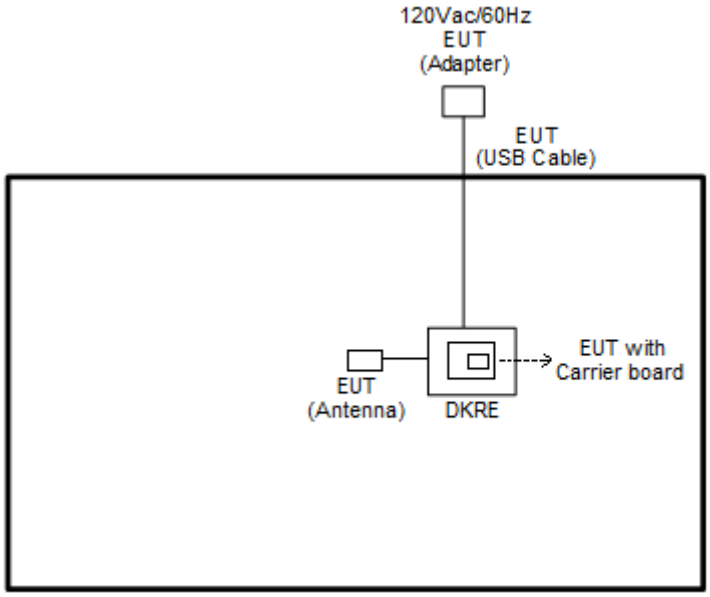
Summary table of Test Cases	
AC Conducted Emission	Mode 1: UHF RFID Link with tag + USB Cable (Charging from Adapter) + Antenna 1 (DKRE Port 1) + DKRE for Sample 1 Mode 2: UHF RFID Link with tag + USB Cable (Charging from Adapter) + Antenna 1 (DKRE Port 2) + DKRE for Sample 1 Mode 3: UHF RFID Link with tag + USB Cable (Charging from Adapter) + Antenna 2 (DKRE Port 1) + DKRE for Sample 1 Mode 4: UHF RFID Link with tag + USB Cable (Charging from Adapter) + Antenna 2 (DKRE Port 2) + DKRE for Sample 1 Mode 5: UHF RFID Link with tag + USB Cable (Charging from Adapter) + Antenna 1 + DKRE + Carrier board for Sample 2 Mode 6: UHF RFID Link with tag + USB Cable (Charging from Adapter) + Antenna 2 + DKRE + Carrier board for Sample 2

2.3 Connection Diagram of Test System

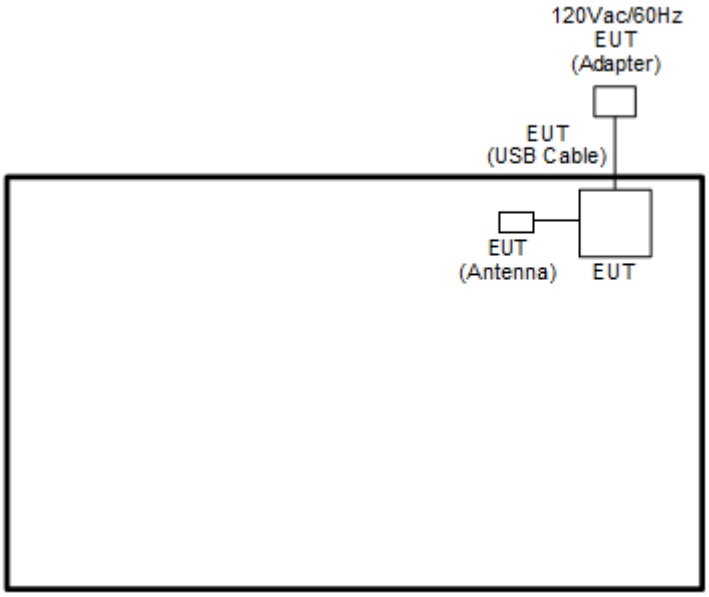
<UHF RFID Tx for Sample 1>



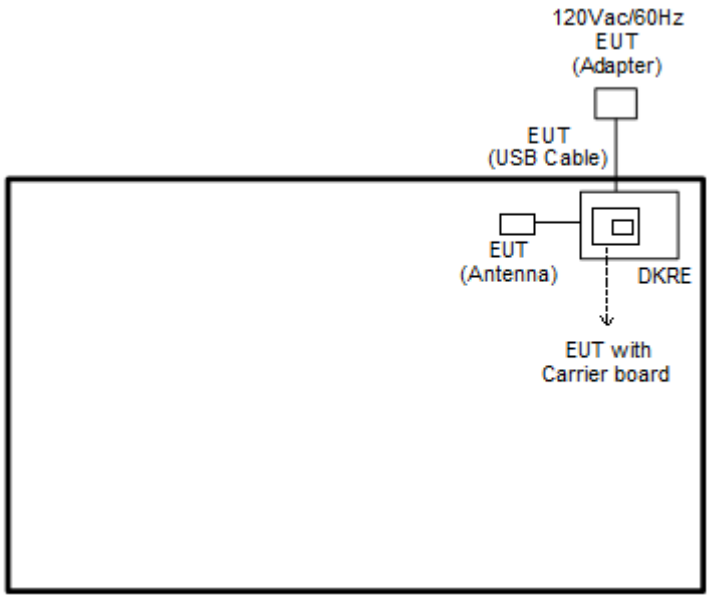
<UHF RFID Tx for Sample 2>



<AC Conducted Emission Mode for Sample 1>



<AC Conducted Emission Mode for Sample 2>



2.4 EUT Operation Test Setup

The RF test items, utility “Tera term Version 4.95” was installed in Notebook which was programmed in order to make the EUT get into the engineering modes to provide channel selection, power level, data rate and the application type and for continuous transmitting signals.

2.5 Measurement Results Explanation Example

For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator factor between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

Example:

The spectrum analyzer offset is derived from RF cable loss and attenuator factor.

Offset = RF cable loss + attenuator factor.

Following shows an offset computation example with cable loss 4.2 dB and 10dB attenuator.

Offset(dB) = RF cable loss(dB) + attenuator factor(dB).

= 4.2 + 10 = 14.2 (dB)

3 Test Result

3.1 Number of Channel Measurement

3.1.1 Limits of Number of Hopping Frequency

Frequency hopping systems in the 902.75-927.25 MHz band shall use at least 25 channels.

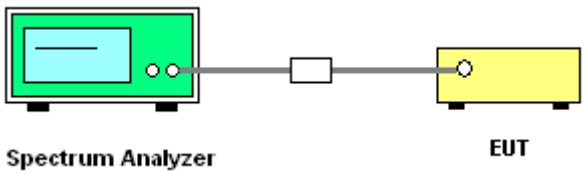
3.1.2 Measuring Instruments

See list of measuring equipment of this test report.

3.1.3 Test Procedure

1. The testing follows ANSI C63.10-2013 clause 7.8.3.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Enable the EUT hopping function.
5. Use the following spectrum analyzer settings: Span = the frequency band of operation; RBW = 300kHz; VBW ≥ RBW; Sweep = auto; Detector function = peak; Trace = max hold.
6. The number of hopping frequency used is defined as the number of total channel.
7. Record the measurement data derived from spectrum analyzer.

3.1.4 Test Setup

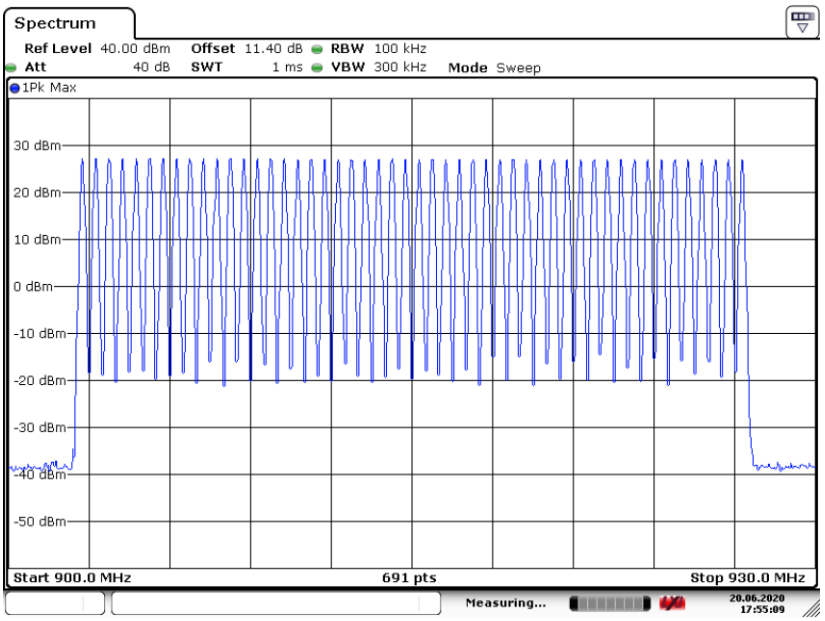


3.1.5 Test Result of Number of Hopping Frequency

Test Engineer :	Tommy Lee	Temperature :	22.2~23.7℃
		Relative Humidity :	51.0~53.6%

Sample 1 (DKRE Port 1)

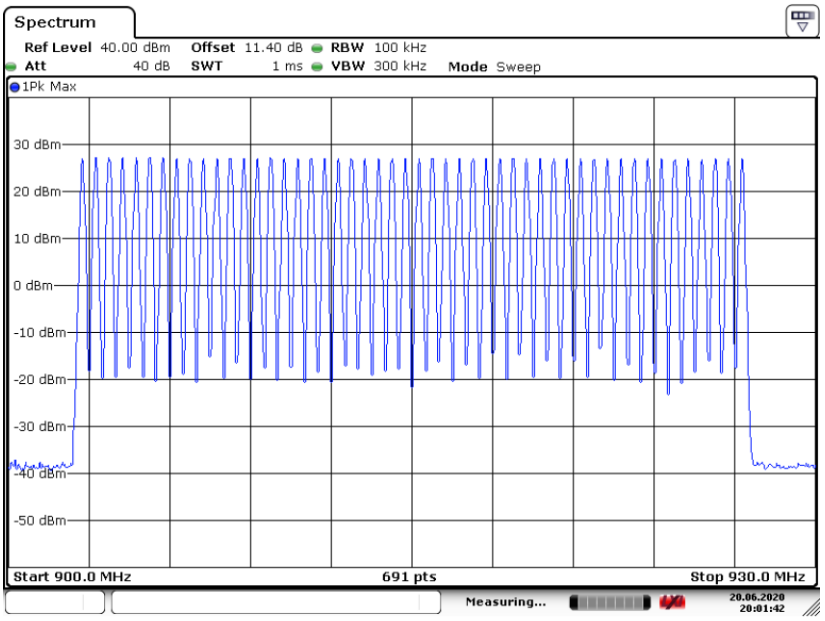
Number of Hopping Channel Plot on Channel 00 - 49



Date: 20.JUN.2020 17:55:08

Sample 1 (DKRE Port 2)

Number of Hopping Channel Plot on Channel 00 - 49



Date: 20.JUN.2020 20:01:42

3.2 Hopping Channel Separation Measurement

3.2.1 Limit of Hopping Channel Separation

Frequency hopping systems operating in the 902.75-927.25 MHz band may have hopping channel carrier frequencies that are 20 dB bandwidth of the hopping channel, whichever is greater.

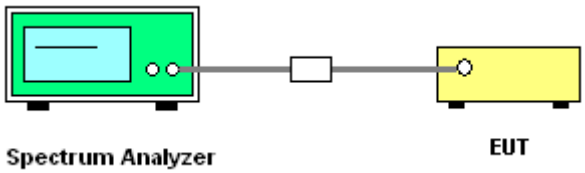
3.2.2 Measuring Instruments

See list of measuring equipment of this test report.

3.2.3 Test Procedures

1. The testing follows ANSI C63.10-2013 clause 7.8.2.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Enable the EUT hopping function.
5. Use the following spectrum analyzer settings:
   Span = wide enough to capture the peaks of two adjacent channels;
   RBW = 300kHz; VBW ≥ RBW; Sweep = auto; Detector function = peak; Trace = max hold.
6. Measure and record the results in the test report.

3.2.4 Test Setup



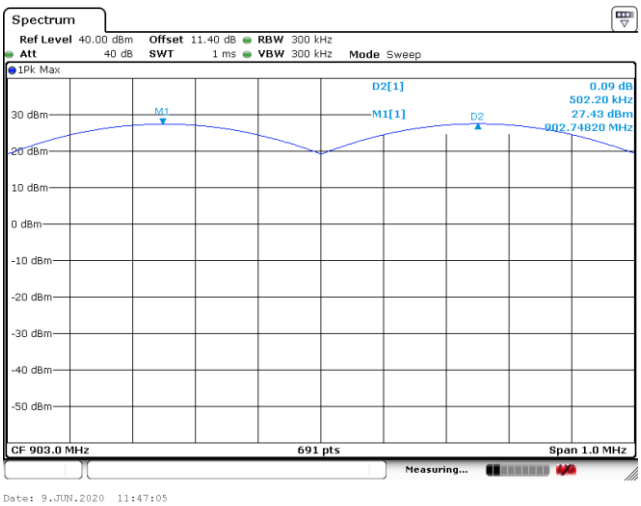
3.2.5 Test Result of Hopping Channel Separation

Test Engineer :	Tommy Lee	Temperature :	22.2~23.7℃
		Relative Humidity :	51.0~53.6%

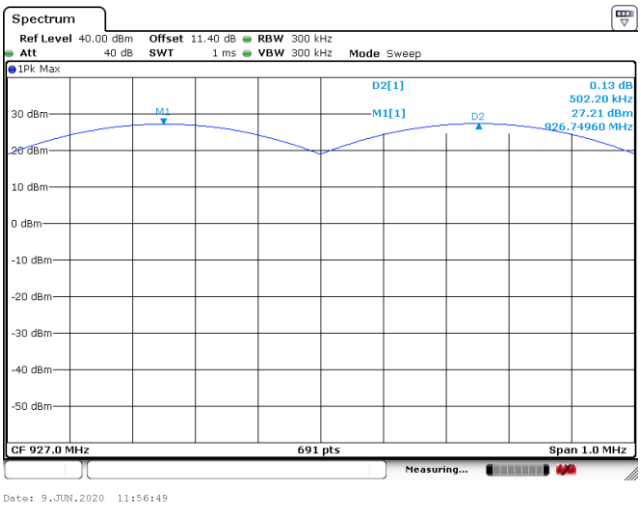
<Sample 1 (DKRE Port 1)>

UHF RFID	Separation (MHz)	Limit (MHz)
902.75 MHz	0.502	0.0680
914.75 MHz	0.498	0.0680
927.25 MHz	0.502	0.0680

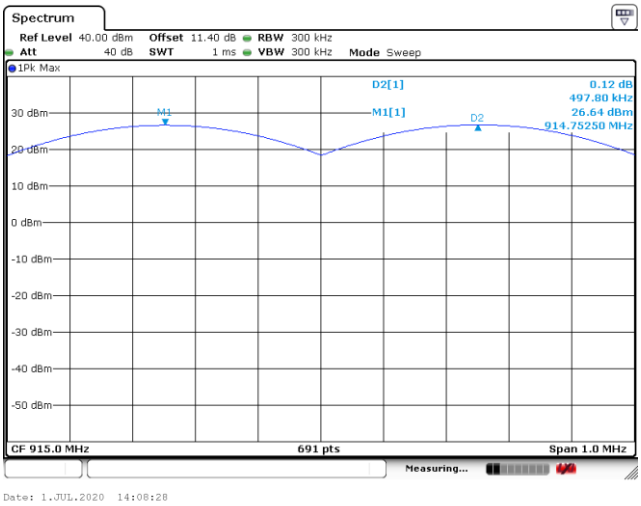
Channel Separation Plot on Channel 00 - 01



Channel Separation Plot on Channel 48 - 49



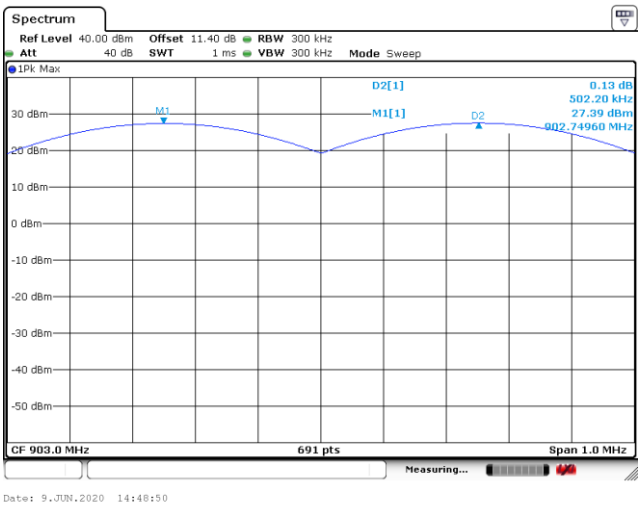
Channel Separation Plot on Channel 24 - 25



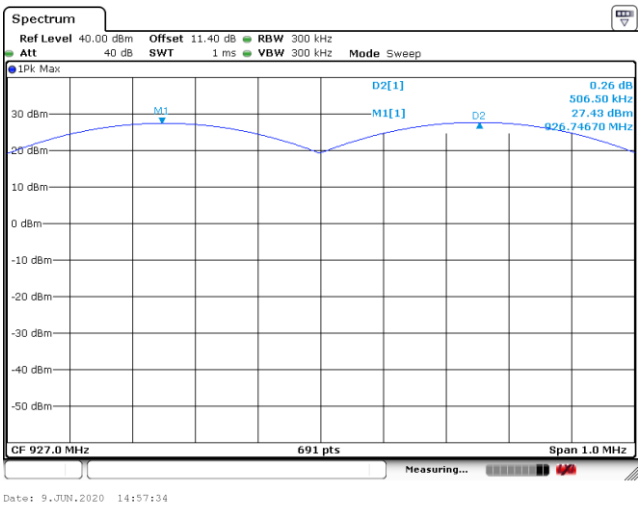
<Sample 1 (DKRE Port 2)>

UHF RFID	Separation (MHz)	Limit (MHz)
902.75 MHz	0.502	0.0680
914.75 MHz	0.502	0.0680
927.25 MHz	0.507	0.0680

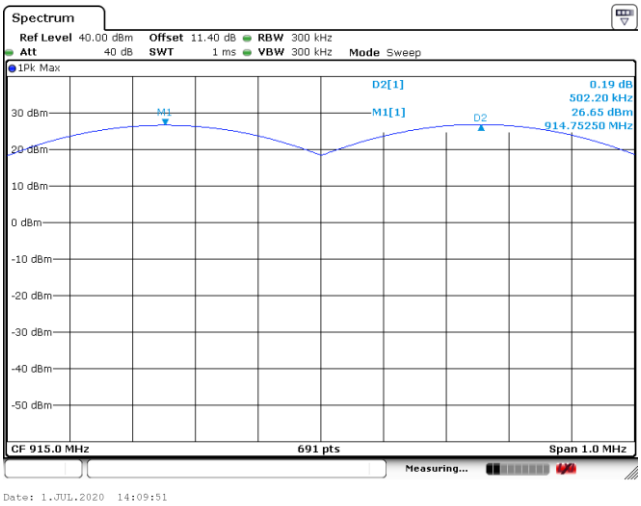
Channel Separation Plot on Channel 00 - 01



Channel Separation Plot on Channel 48 - 49



Channel Separation Plot on Channel 24 - 25



3.3 Dwell Time Measurement

3.3.1 Limit of Dwell Time

The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 20 seconds multiplied by the number of hopping channels employed.

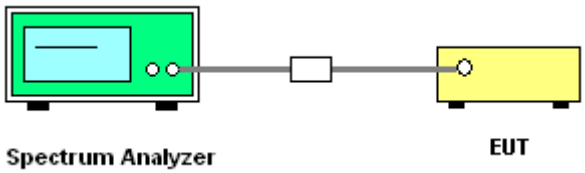
3.3.2 Measuring Instruments

See list of measuring equipment of this test report.

3.3.3 Test Procedures

1. The testing follows ANSI C63.10-2013 clause 7.8.4.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Enable the EUT hopping function.
5. Use the following spectrum analyzer settings: Span = zero span, centered on a hopping channel; RBW = 1 MHz; VBW ≥ RBW; Sweep = as necessary to capture the entire dwell time per hopping channel; Detector function = peak; Trace = max hold.
6. Measure and record the results in the test report.

3.3.4 Test Setup



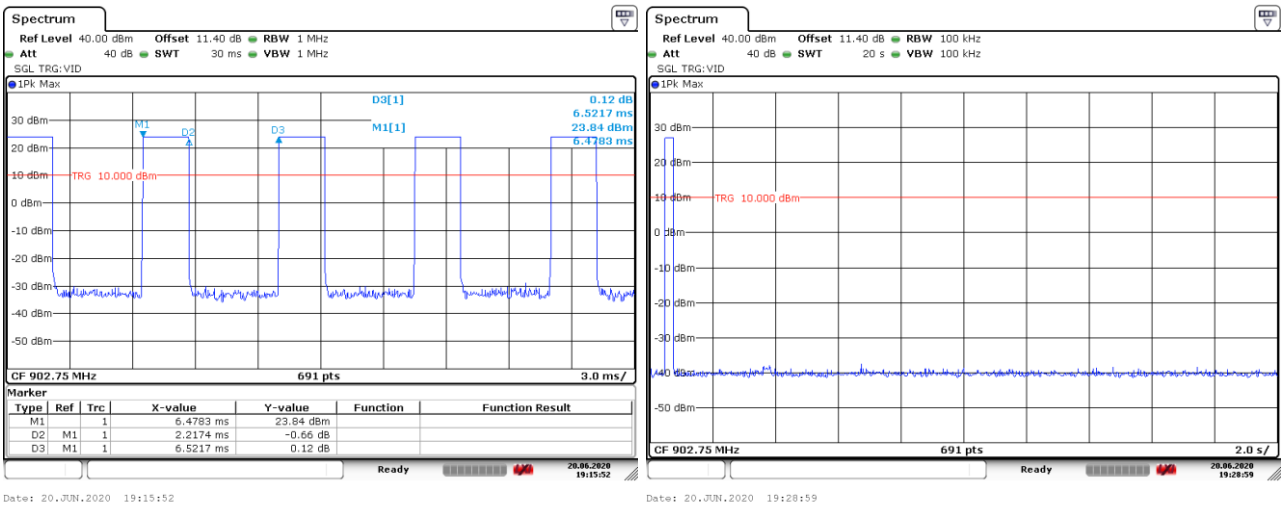
3.3.5 Test Result of Dwell Time

Test Engineer :	Tommy Lee	**Temperature :**	22.2~23.7℃
		Relative Humidity :	51.0~53.6%

<Sample 1 (DKRE Port 1)>

Package Mode	Package Transfer Time(ms)	Number of Hopping	Dwell Time(s)	Limit
Normal	2.22	1.00	0.000	< 0.4s

Package Transfer Time Plot

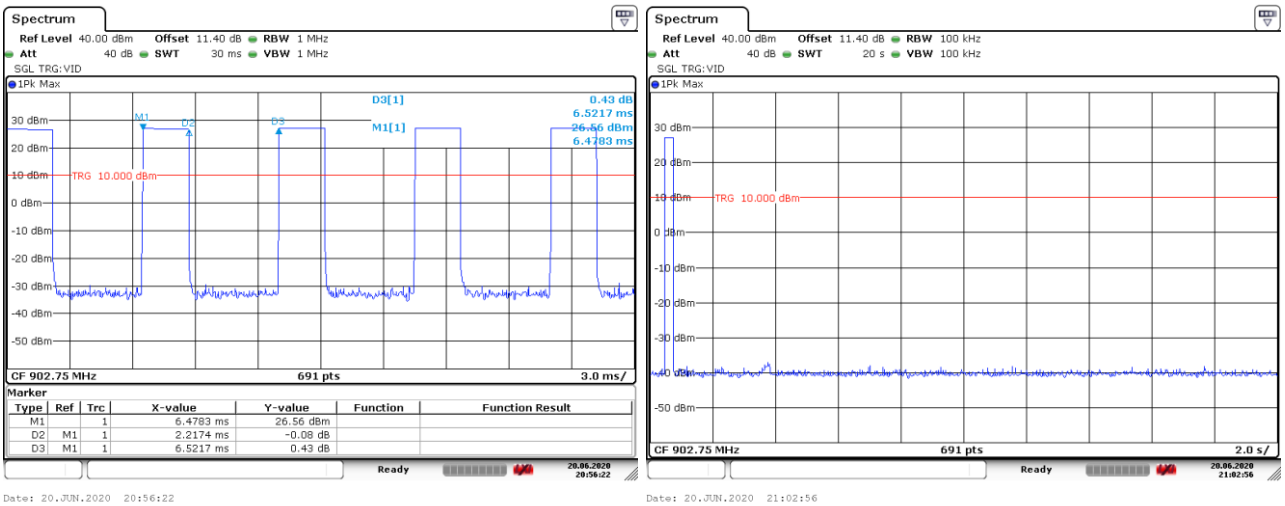


Remark: Dwell Time(s) = Hops Over Occupancy Time (hops) x Package Transfer Time

<Sample 1 (DKRE Port 2)>

Package Mode	Package Transfer Time(ms)	Number of Hopping	Dwell Time(s)	Limit
Normal	2.22	1.00	0.000	< 0.4s

Package Transfer Time Plot



Remark: Dwell Time(s) = Hops Over Occupancy Time (hops) x Package Transfer Time

3.4 20dB and 99% Bandwidth Measurement

3.4.1 Limit of 20dB and 99% Bandwidth

Reporting only

3.4.2 Measuring Instruments

See list of measuring equipment of this test report.

3.4.3 Test Procedures

1. The testing follows ANSI C63.10-2013 clause 6.9.2 and 6.9.3.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Use the following spectrum analyzer settings for 20dB Bandwidth measurement.
   Span = approximately 2 to 5 times the 20 dB bandwidth, centered on a hopping channel;
   RBW ≥ 1% of the 20 dB bandwidth; VBW ≥ RBW; Sweep = auto; Detector function = peak;
   Trace = max hold.
5. Use the following spectrum analyzer settings for 99 % Bandwidth measurement.
   Span = approximately 1.5 to 5 times the 99% bandwidth, centered on a hopping channel;
   RBW ≥ 1-5% of the 99% bandwidth; VBW ≥ 3 * RBW; Sweep = auto; Detector function = peak;
   Trace = max hold.
6. Measure and record the results in the test report.

3.4.4 Test Setup

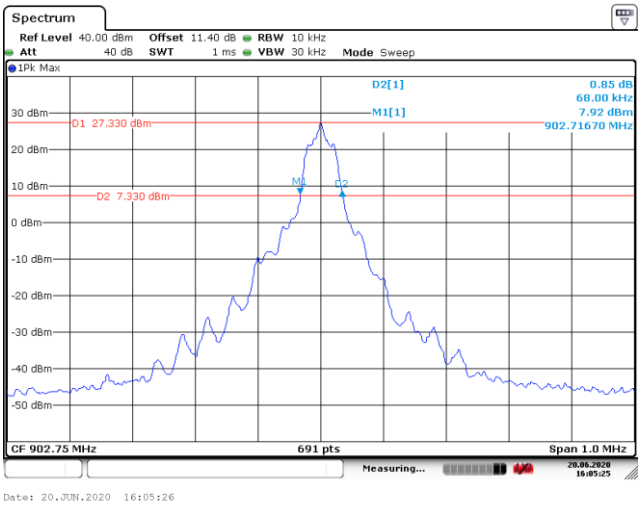
3.4.5 Test Result of 20dB Bandwidth

Test Engineer :	Tommy Lee	Temperature :	22.2~23.7℃
		Relative Humidity :	51.0~53.6%

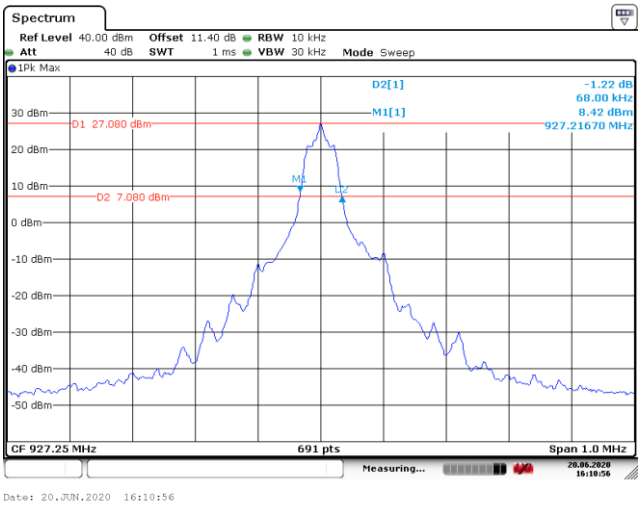
<Sample 1 (DKRE Port 1)>

UHF RFID	20dB Bandwidth (MHz)
902.75 MHz	0.068
914.75 MHz	0.068
927.25 MHz	0.068

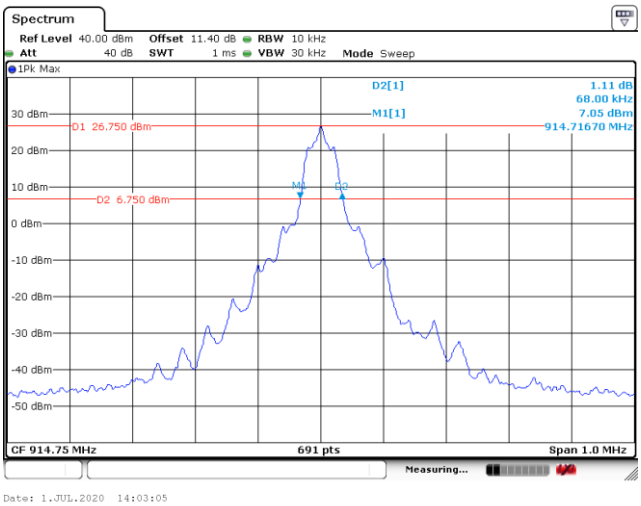
20 dB Bandwidth Plot on Channel 00



20 dB Bandwidth Plot on Channel 49



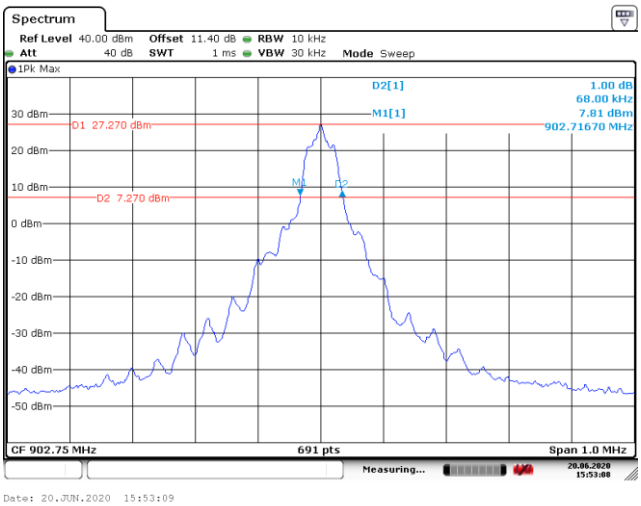
20 dB Bandwidth Plot on Channel 24



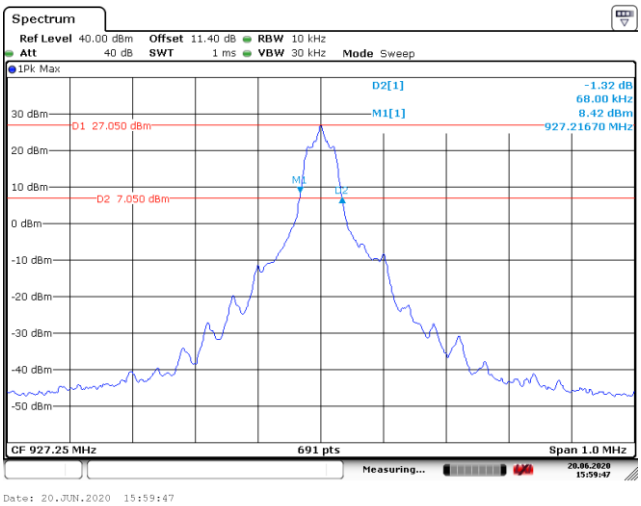
<Sample 1 (DKRE Port 2)>

UHF RFID	20dB Bandwidth (MHz)
902.75 MHz	0.068
914.75 MHz	0.068
927.25 MHz	0.068

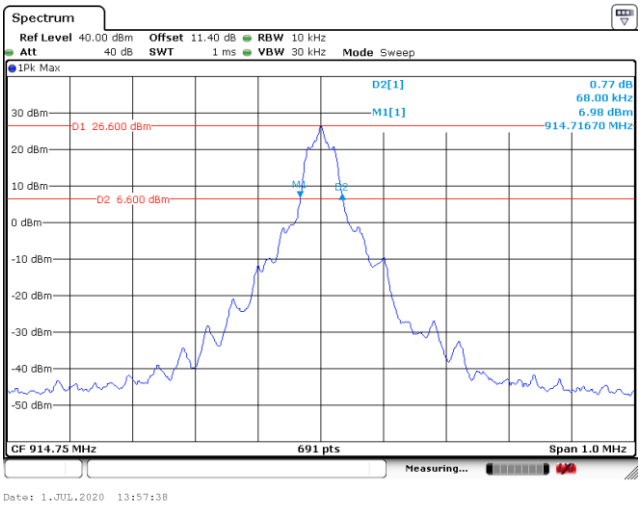
20 dB Bandwidth Plot on Channel 00



20 dB Bandwidth Plot on Channel 49



20 dB Bandwidth Plot on Channel 24



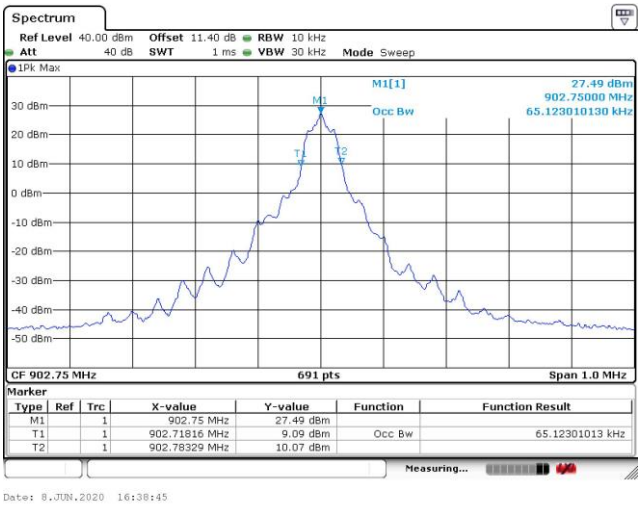
3.4.6 Test Result of 99% Occupied Bandwidth

Test Engineer :	Tommy Lee	Temperature :	22.2~23.7℃
		Relative Humidity :	51.0~53.6%

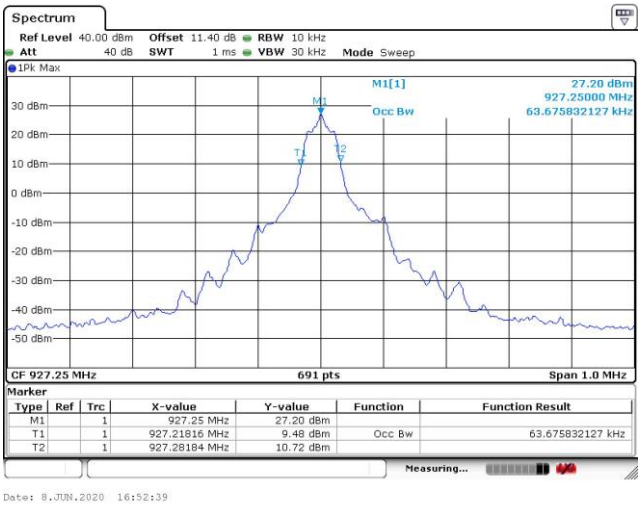
<Sample 1 (DKRE Port 1)>

UHF RFID	99% Bandwidth (MHz)	Max Occupied Bandwidth
902.75 MHz	0.065	0.0651
914.75 MHz	0.065	
927.25 MHz	0.064	

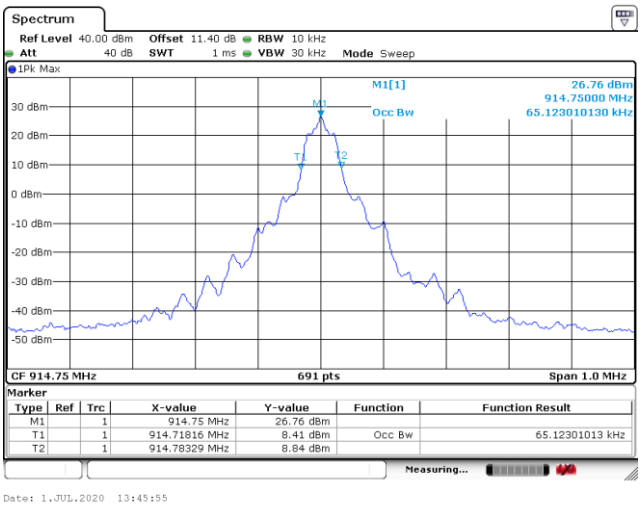
99% Occupied Bandwidth Plot on Channel 00



99% Occupied Bandwidth Plot on Channel 49



99% Occupied Bandwidth Plot on Channel 24

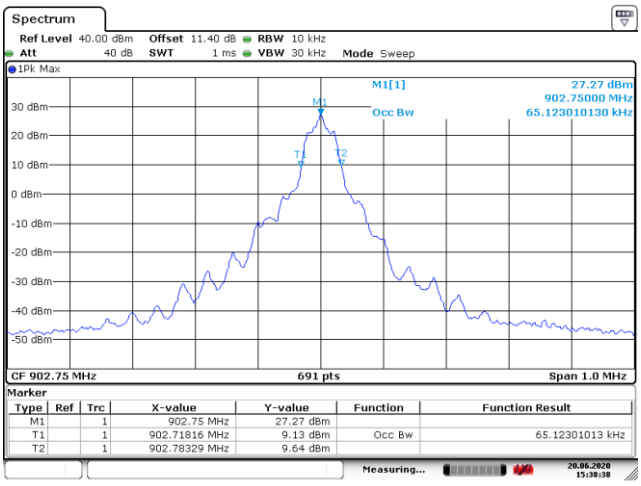


Note: The occupied channel bandwidth is maintained within the band of operation for all of the modulations.

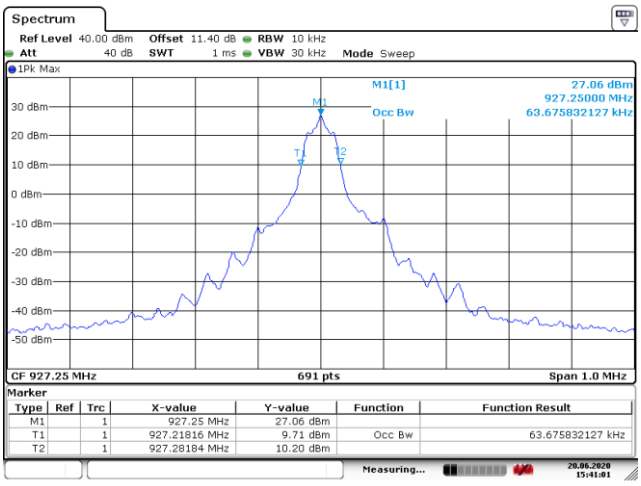
<Sample 1 (DKRE Port 2)>

UHF RFID	99% Bandwidth (MHz)	Max Occupied Bandwidth
902.75 MHz	0.065	0.0651
914.75 MHz	0.065	
927.25 MHz	0.064	

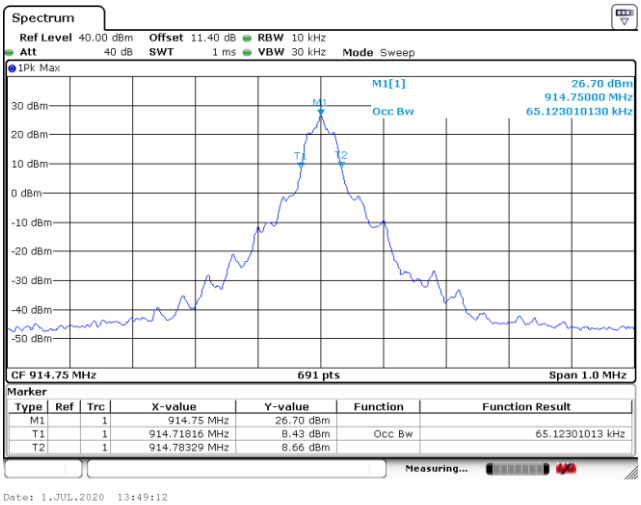
99% Occupied Bandwidth Plot on Channel 00



99% Occupied Bandwidth Plot on Channel 49



99% Occupied Bandwidth Plot on Channel 24



Note: The occupied channel bandwidth is maintained within the band of operation for all of the modulations.

3.5 Output Power Measurement

3.5.1 Limit of Output Power

Section 15.247 (a) Operation under the provisions of this Section is limited to frequency hopping and digitally modulated intentional radiators that comply with the following provisions: (1)(i) For frequency hopping systems operating in the 902-928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period; if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period. The maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.

Section 15.247 (b) The maximum peak conducted output power of the intentional radiator shall not exceed the following: (2) For frequency hopping systems operating in the 902-928 MHz band: 1 watt for systems employing at least 50 hopping channels; and, 0.25 watts for systems employing less than 50 hopping channels, but at least 25 hopping channels, as permitted under paragraph (a)(1)(i) of this section.

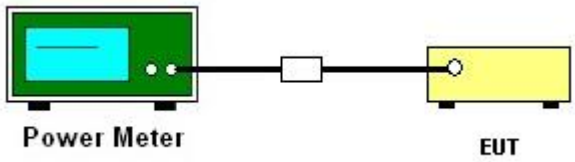
3.5.2 Measuring Instruments

See list of measuring equipment of this test report.

3.5.3 Test Procedures

1. The testing follows ANSI C63.10-2013 clause 7.8.5.
2. The RF output of EUT was connected to the power meter by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Measure the conducted output power with cable loss and record the results in the test report.
5. Measure and record the results in the test report.

3.5.4 Test Setup



3.5.5 Test Result of Output Power

Test Engineer :	Tommy Lee	Temperature :	22.2~23.7℃
		Relative Humidity :	51.0~53.6%

<Sample 1 (DKRE Port 1)>

UHF RFID	Output Power (dBm)	Output Power (mW)	Limit
902.75 MHz	27.22	527.23	< 33.00 dBm
914.75 MHz	26.99	500.03	< 33.00 dBm
927.25 MHz	26.90	489.78	< 33.00 dBm

<Sample 1 (DKRE Port 2)>

UHF RFID	Output Power (dBm)	Output Power (mW)	Limit
902.75 MHz	27.09	511.68	< 33.00 dBm
914.75 MHz	26.94	494.31	< 33.00 dBm
927.25 MHz	26.88	487.53	< 33.00 dBm

<Sample 2>

UHF RFID	Output Power (dBm)	Output Power (mW)	Limit
902.75 MHz	27.20	524.807	< 33.00 dBm
914.75 MHz	27.03	504.661	< 33.00 dBm
927.25 MHz	26.93	493.174	< 33.00 dBm

3.6 Conducted Band Edges Measurement

3.6.1 Limit of Band Edges

In any 100 kHz bandwidth outside the intentional radiation frequency band, the radio frequency power shall be at least 20 dB below the highest level of the radiated power. In addition, radiated emissions which fall in the restricted bands must also comply with the radiated emission limits.

3.6.2 Measuring Instruments

See list of measuring equipment of this test report.

3.6.3 Test Procedures

1. The testing follows ANSI C63.10-2013 clause 7.8.6.
2. Set to the maximum power setting and enable the EUT transmit continuously.
3. Set RBW = 100kHz, VBW = 300kHz. Band edge emissions must be at least 20 dB down from the highest emission level within the authorized band as measured with a 100kHz RBW. The attenuation shall be 30 dB instead of 20 dB when RMS conducted output power procedure is used.
4. Enable hopping function of the EUT and then repeat step 2. and 3.
5. Measure and record the results in the test report.

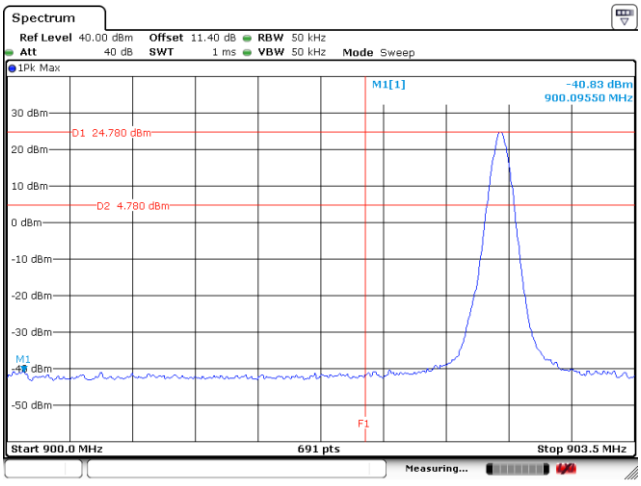
3.6.4 Test Setup

3.6.5 Test Result of Conducted Band Edges

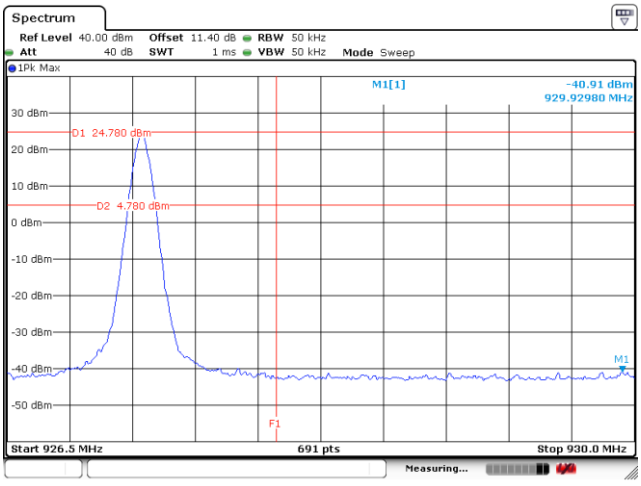
Test Engineer :	Tommy Lee	Temperature :	22.2~23.7℃
		Relative Humidity :	51.0~53.6%

<Sample 1 (DKRE Port 1)>

Low Band Edge Plot on Channel 00

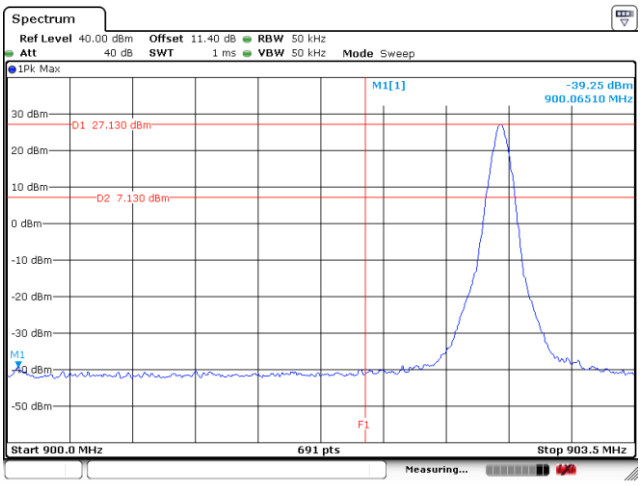


High Band Edge Plot on Channel 49

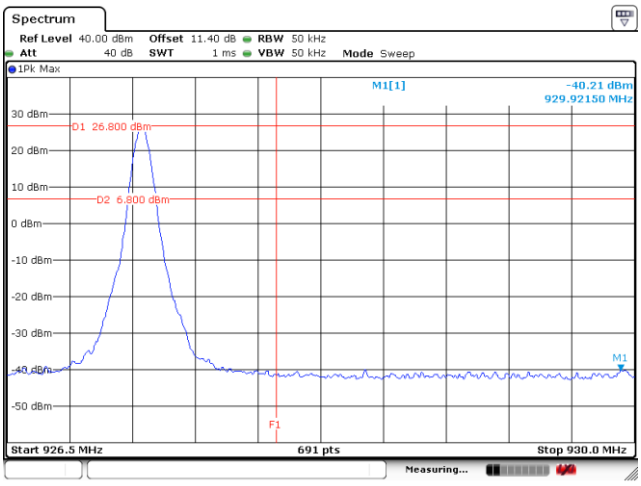


<Sample 1 (DKRE Port 2)>

Low Band Edge Plot on Channel 00



High Band Edge Plot on Channel 49

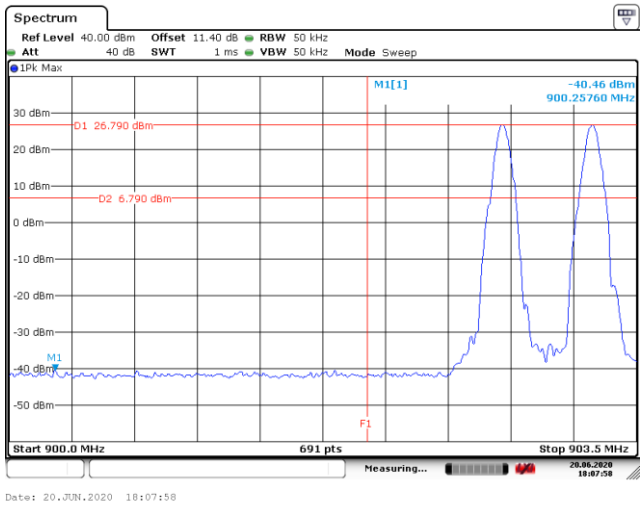


3.6.6 Test Result of Conducted Hopping Mode Band Edges

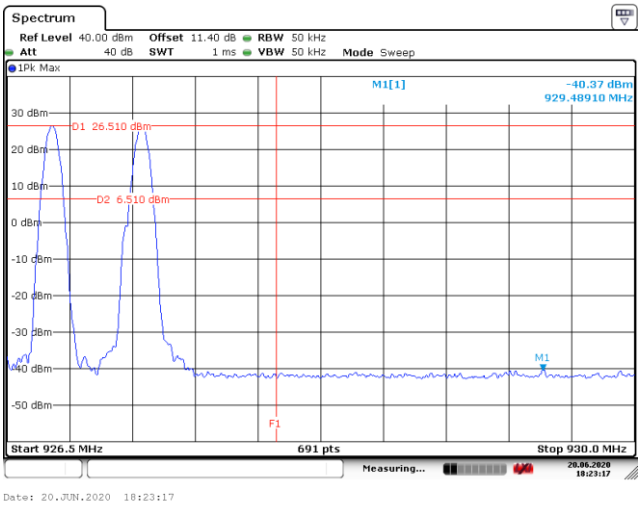
Test Engineer :	Tommy Lee	Temperature :	22.2~23.7℃
		Relative Humidity :	51.0~53.6%

<Sample 1 (DKRE Port 1)>

Hopping Mode Low Band Edge Plot

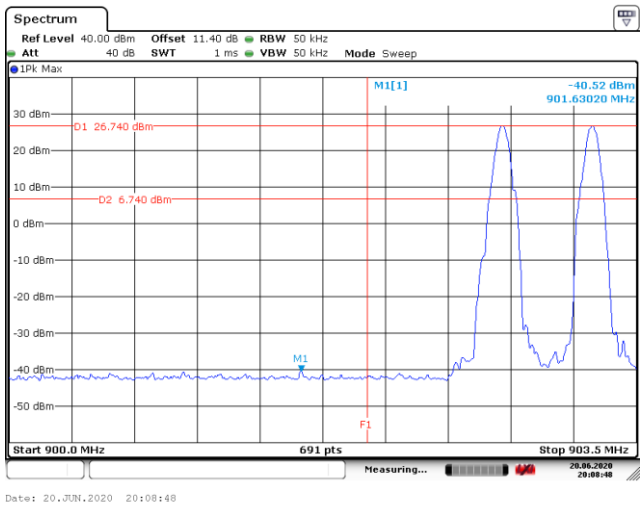


Hopping Mode High Band Edge Plot

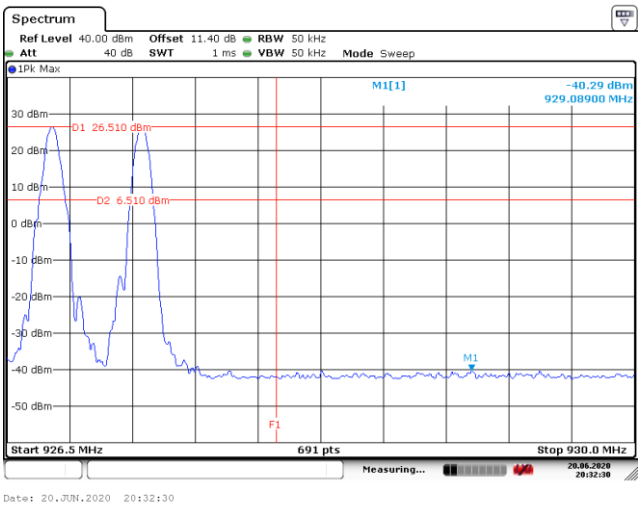


<Sample 1 (DKRE Port 2)>

Hopping Mode Low Band Edge Plot



Hopping Mode High Band Edge Plot



3.7 Conducted Spurious Emission Measurement

3.7.1 Limit of Spurious Emission Measurement

In any 100 kHz bandwidth outside the intentional radiation frequency band, the radio frequency power shall be at least 20 dB below the highest level of the radiated power. In addition, radiated emissions which fall in the restricted bands must also comply with the radiated emission limits.

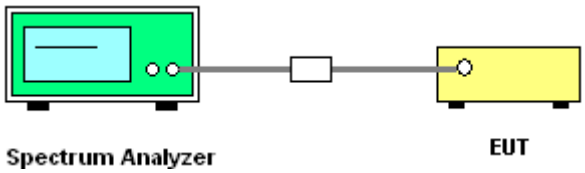
3.7.2 Measuring Instruments

See list of measuring equipment of this test report.

3.7.3 Test Procedure

1. The testing follows ANSI C63.10-2013 clause 7.8.8.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Set RBW = 100 kHz, VBW = 300kHz, scan up through 10th harmonic. All harmonics / spurs must be at least 20 dB down from the highest emission level within the authorized band as measured with a 100 kHz RBW.
5. Measure and record the results in the test report.
6. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

3.7.4 Test Setup

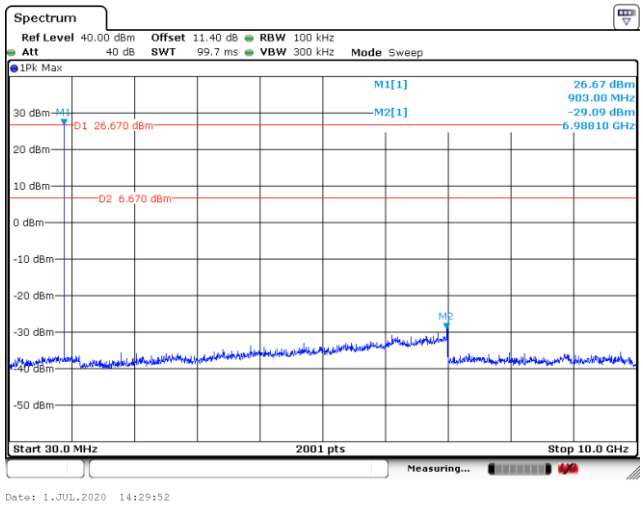


3.7.5 Test Result of Conducted Spurious Emission

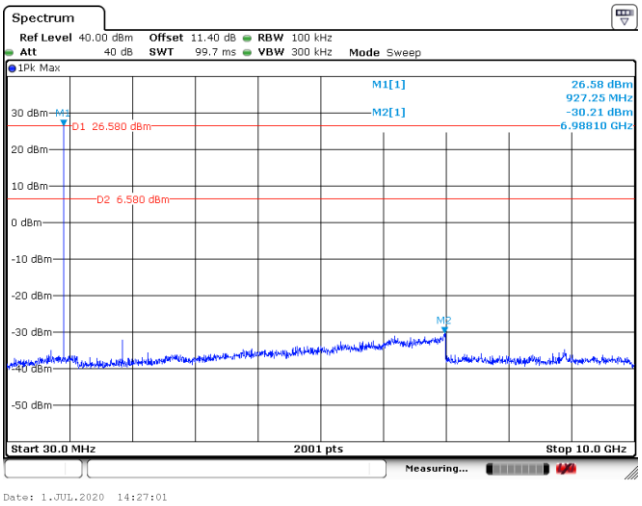
Test Engineer :	Tommy Lee	Temperature :	22.2~23.7℃
		Relative Humidity :	51.0~53.6%

<Sample 1 (DKRE Port 1)>

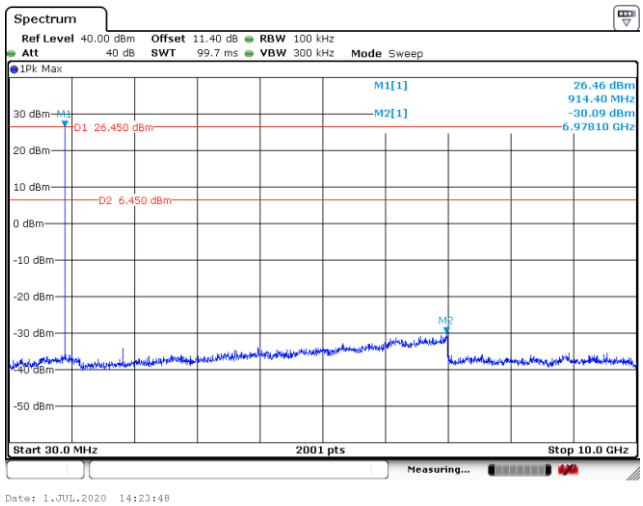
CSE Plot on Ch 00 between 30MHz ~ 10 GHz



CSE Plot on Ch 49 between 30MHz ~ 10 GHz

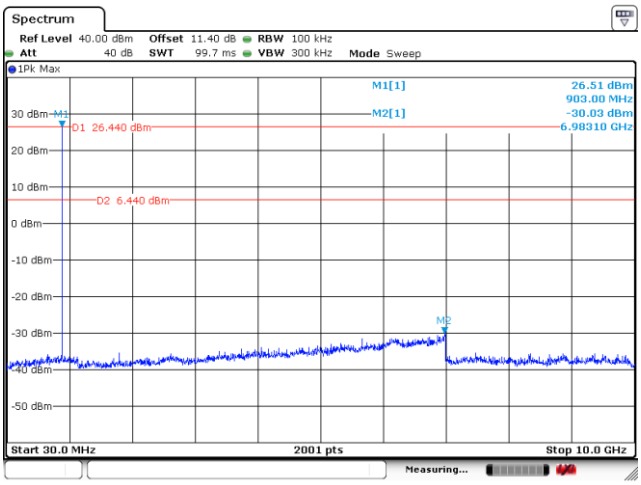


CSE Plot on Ch 24 between 30MHz ~ 10 GHz

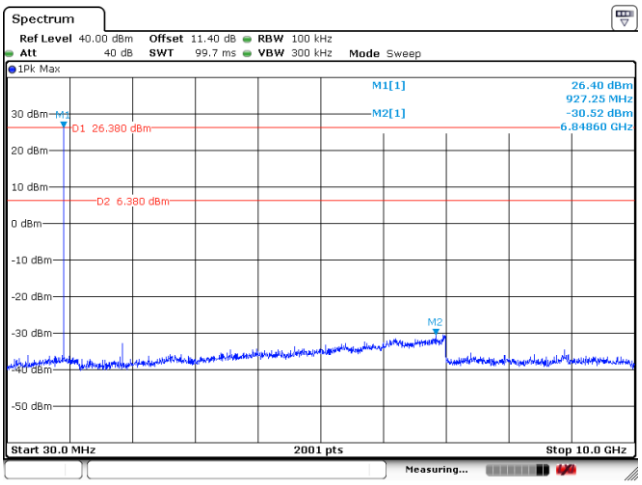


<Sample 1 (DKRE Port 2)>

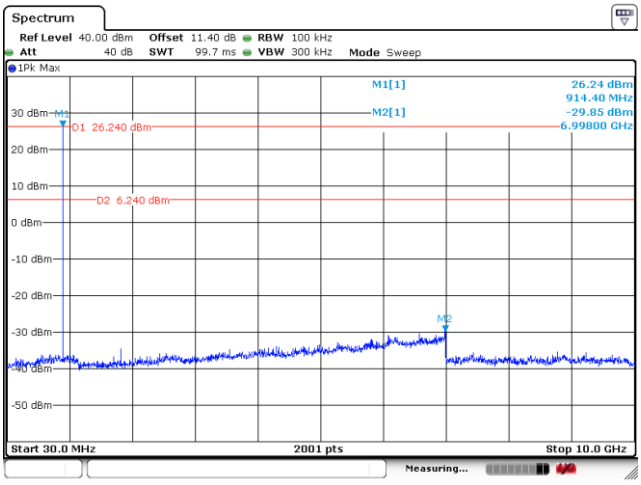
CSE Plot on Ch 00 between 30MHz ~ 10 GHz



CSE Plot on Ch 49 between 30MHz ~ 10 GHz



CSE Plot on Ch 24 between 30MHz ~ 10 GHz



3.8 Radiated Band Edges and Spurious Emission Measurement

3.8.1 Limit of Radiated Band Edges and Spurious Emission

In any 100 kHz bandwidth outside the intentional radiator frequency band, all harmonics/spurious must be at least 20 dB below the highest emission level within the authorized band. In addition, radiated emissions which fall in the restricted bands must also comply with the limits as below.

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30.0	30	30
30 – 88	100	3
88 – 216	150	3
216 – 960	200	3
Above 960	500	3

3.8.2 Measuring Instruments

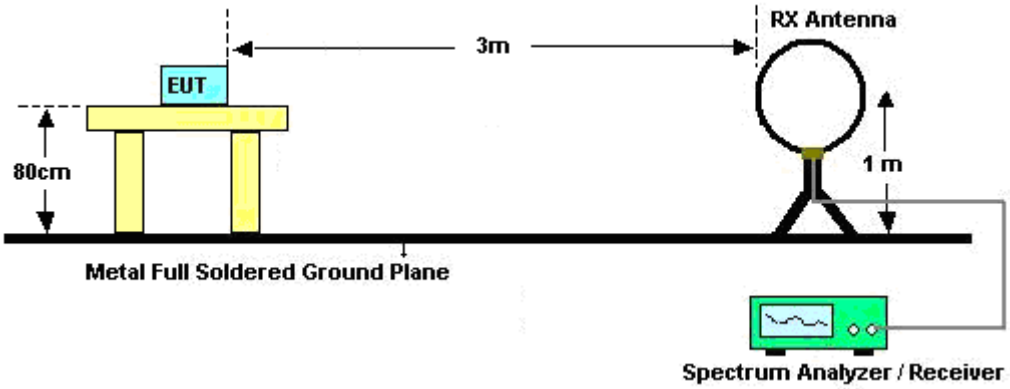
See list of measuring equipment of this test report.

3.8.3 Test Procedures

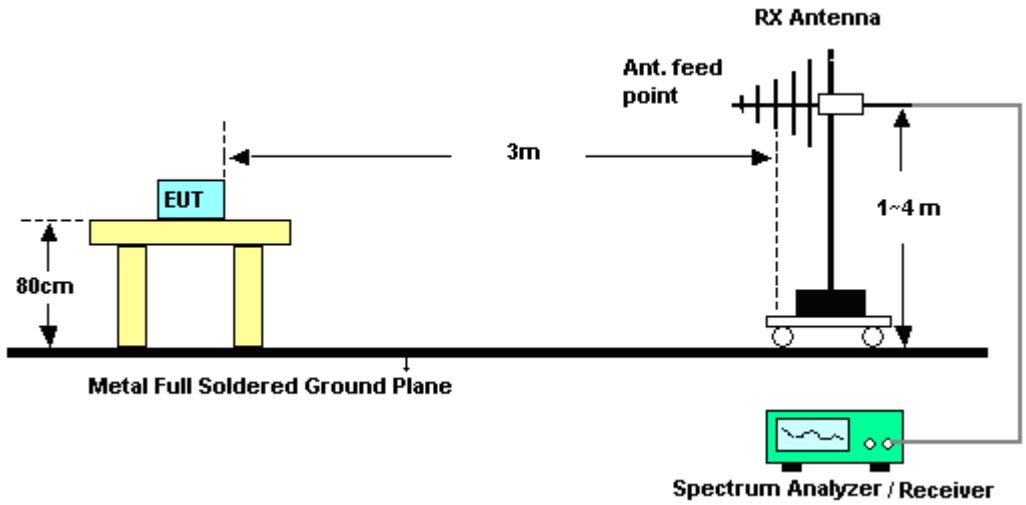
1. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
2. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
3. For each suspected emission, the EUT was arranged to its worst case and then tune the Antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level to comply with the guidelines.
4. Set to the maximum power setting and enable the EUT transmit continuously.
5. Use the following spectrum analyzer settings:
   (1) Span shall wide enough to fully capture the emission being measured;
   (2) Set RBW=100 kHz for f < 1 GHz, RBW=1MHz for f>1GHz ; VBW ≥ RBW; Sweep = auto; Detector function = peak; Trace = max hold for peak
   (3) For average measurement: use duty cycle correction factor method per 15.35(c).
   Duty cycle = On time/100 milliseconds
   On time = N1*L1+N2*L2+...+Nn-1*LNn-1+Nn*Ln
   Where N1 is number of type 1 pulses, L1 is length of type 1 pulses, etc.
   Average Emission Level = Peak Emission Level + 20*log(Duty cycle)
6. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level

3.8.4 Test Setup

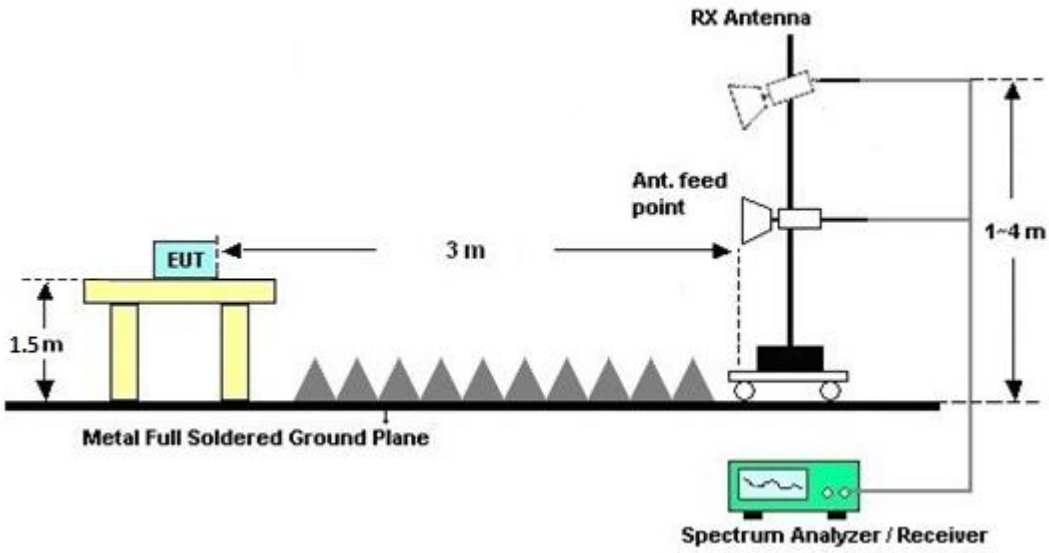
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



3.8.5 Test Results of Radiated Spurious Emissions (9 kHz ~ 30 MHz)

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line was not reported.

There is a comparison data of both open-field test site and alternative test site - semi-Anechoic chamber according to 414788 D01 Radiated Test Site v01r01, and the result came out very similar.

3.8.6 Test Result of Radiated Spurious at Band Edges

Please refer to Appendix B and C.

3.8.7 Duty Cycle

Please refer to Appendix D.

3.8.8 Test Result of Radiated Spurious Emission

Please refer to Appendix B and C.

3.9 AC Power Line Conducted Emissions Measurement

3.9.1 Limit of AC Conducted Emission

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table.

Frequency of Emission (MHz)	Conducted Limit (dBμV)	
	Quasi-Peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

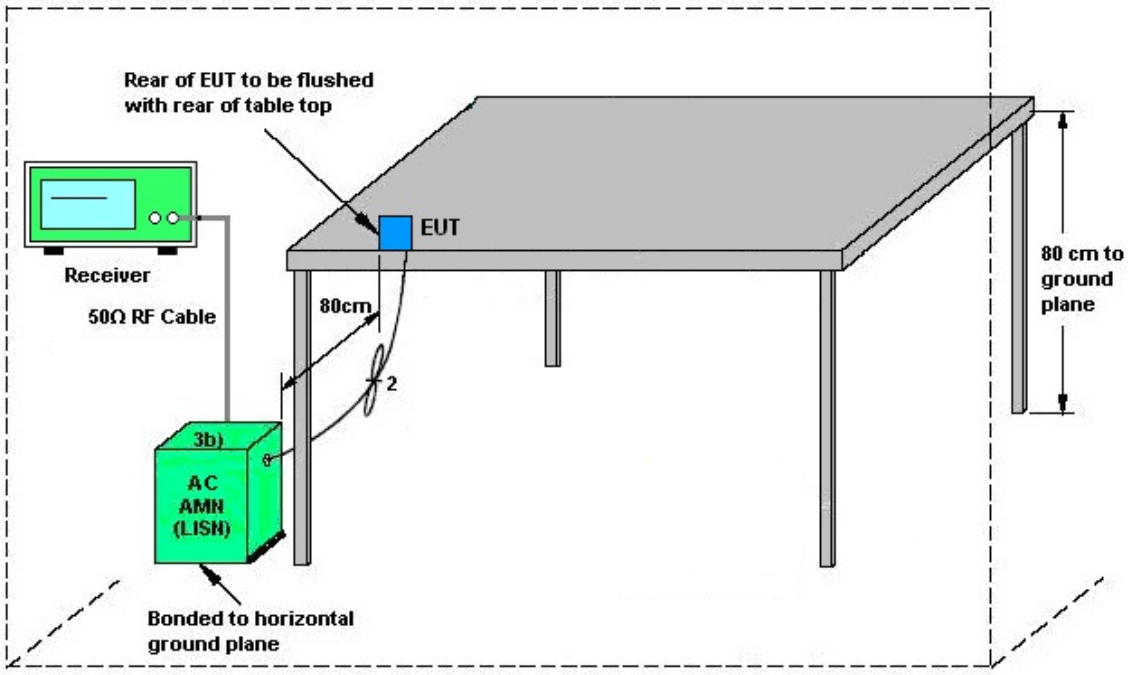
3.9.2 Measuring Instruments

See list of measuring equipment of this test report.

3.9.3 Test Procedures

1. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
6. Both sides of AC line were checked for maximum conducted interference.
7. The frequency range from 150 kHz to 30 MHz was searched.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth (IF Bandwidth = 9kHz) with Maximum Hold Mode. Then measurement is also conducted by Average Detector and Quasi-Peak Detector Function respectively.

3.9.4 Test setup



AMN = Artificial mains network (LISN)
AE = Associated equipment
EUT = Equipment under test
ISN = Impedance stabilization network

3.9.5 Test Result of AC Conducted Emission

Please refer to Appendix A.

3.10 Antenna Requirements

3.10.1 Standard Applicable

If directional gain of transmitting Antennas is greater than 6dBi, the power shall be reduced by the same level in dB comparing to gain minus 6dBi. The use of a permanently attached Antenna or of an Antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the rule.

3.10.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

3.10.3 Antenna Gain

The antenna peak gain of EUT is 6 dBi. Therefore, it is not necessary to reduce maximum peak output power limit.

4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Hygrometer	Ji Zhan	HTC-1	2	N/A	Mar. 02. 2020	May 29, 2020 ~ Jul. 02, 2020	Mar. 01. 2021	Conducted (TH05-HY)
Power Meter	Anritsu	ML2495A	1218006	N/A	Oct. 14, 2019	May 29, 2020 ~ Jul. 02, 2020	Oct. 13, 2020	Conducted (TH05-HY)
Power Sensor	Anritsu	MA2411B	1207363	300MHz~40GHz	Aug. 08, 2019	May 29, 2020 ~ Jul. 02, 2020	Aug. 07, 2020	Conducted (TH05-HY)
Signal Analyzer	Rohde & Schwarz	FSV40	101566	10Hz~40GHz	Jul. 15, 2019	May 29, 2020 ~ Jul. 02, 2020	Jul. 14, 2020	Conducted (TH05-HY)
Switch Control Manframe	Burgeon	ETF-058	EC1300484	N/A	Aug. 22, 2019	May 29, 2020 ~ Jul. 02, 2020	Aug. 21, 2020	Conducted (TH05-HY)
AC Power Source	ChainTek	APC-1000W	N/A	N/A	N/A	May 26, 2020 ~ Jun. 01, 2020	N/A	Conduction (CO05-HY)
EMI Test Receiver	Rohde & Schwarz	ESR3	102388	9kHz~3.6GHz	Nov. 15, 2019	May 26, 2020 ~ Jun. 01, 2020	Nov. 14, 2020	Conduction (CO05-HY)
Hygrometer	Testo	608-H1	34913912	N/A	Nov. 07, 2019	May 26, 2020 ~ Jun. 01, 2020	Nov. 06, 2020	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100081	9kHz~30MHz	Nov. 15, 2019	May 26, 2020 ~ Jun. 01, 2020	Nov. 14, 2020	Conduction (CO05-HY)
Software	Rohde & Schwarz	EMC32 V10.30	N/A	N/A	N/A	May 26, 2020 ~ Jun. 01, 2020	N/A	Conduction (CO05-HY)
LF Cable	HUBER + SUHNER	RG-214/U	LF01	N/A	Jan. 02, 2020	May 26, 2020 ~ Jun. 01, 2020	Jan. 01, 2021	Conduction (CO05-HY)
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100851	N/A	Jan. 02, 2020	May 26, 2020 ~ Jun. 01, 2020	Jan. 01, 2021	Conduction (CO05-HY)
Bilog Antenna	TESEQ	CBL 6111D & 00800N1D01N-06	35419 & 03	30MHz~1GHz	Apr. 29, 2020	Jun. 18, 2020 ~ Jul. 04, 2020	Apr. 28, 2021	Radiation (03CH07-HY)
Double Ridge Horn Antenna	ESCO	3117	00075962	1GHz ~ 18GHz	Dec. 06, 2019	Jun. 18, 2020 ~ Jul. 04, 2020	Dec. 05, 2020	Radiation (03CH07-HY)
EMI Test Receiver	Agilent	N9038A(MXE)	MY53290053	20Hz~26.5GHz	May 21, 2020	Jun. 18, 2020 ~ Jul. 04, 2020	May 20, 2021	Radiation (03CH07-HY)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100315	9 kHz~30 MHz	Dec. 26, 2019	Jun. 18, 2020 ~ Jul. 04, 2020	Dec. 25, 2020	Radiation (03CH07-HY)
Preamplifier	MITEQ	AMF-7D-00101800-30-10P	1590075	1GHz~18GHz	Apr. 23, 2020	Jun. 18 2020 ~ Jul. 04, 2020	Apr. 22, 2021	Radiation (03CH07-HY)
Preamplifier	COM-POWER	PA-103A	161241	10MHz~1GHz	May 19, 2020	Jun. 18, 2020 ~ Jul. 04, 2020	May 18, 2021	Radiation (03CH07-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY24971/4, MY28655/4	9kHz~30MHz	Feb. 25, 2020	Jun. 18, 2020 ~ Jul. 04, 2020	Feb. 24, 2021	Radiation (03CH07-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY28655/4, MY24971/4, MY15682/4	30MHz~1GHz	Feb. 25, 2020	Jun. 18, 2020 ~ Jul. 04, 2020	Feb. 24, 2021	Radiation (03CH07-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY28655/4, MY24971/4, MY15682/4	1GHz~18GHz	Feb. 25, 2020	Jun. 18, 2020 ~ Jul. 04, 2020	Feb. 24, 2021	Radiation (03CH07-HY)
Controller	ChainTek	Chaintek 3000	N/A	Control Turn table	N/A	Jun. 18, 2020 ~ Jul. 04, 2020	N/A	Radiation (03CH07-HY)
Controller	Max-Full	MF7802	MF780208368	Control Ant Mast	N/A	Jun. 18, 2020 ~ Jul. 04, 2020	N/A	Radiation (03CH07-HY)
Antenna Mast	Max-Full	MFA520BS	N/A	1m~4m	N/A	Jun. 18, 2020 ~ Jul. 04, 2020	N/A	Radiation (03CH07-HY)
Turn Table	ChainTek	Chaintek 3000	N/A	0~360 Degree	N/A	Jun. 18, 2020 ~ Jul. 04, 2020	N/A	Radiation (03CH07-HY)
USB Data Logger	TECPEL	TR-32	HE17XB2495	N/A	N/A	Jun. 18, 2020 ~ Jul. 04, 2020	N/A	Radiation (03CH07-HY)

5 Uncertainty of Evaluation

Uncertainty of Conducted Emission Measurement (150kHz ~ 30MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**2.30**

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**4.6**

Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz)

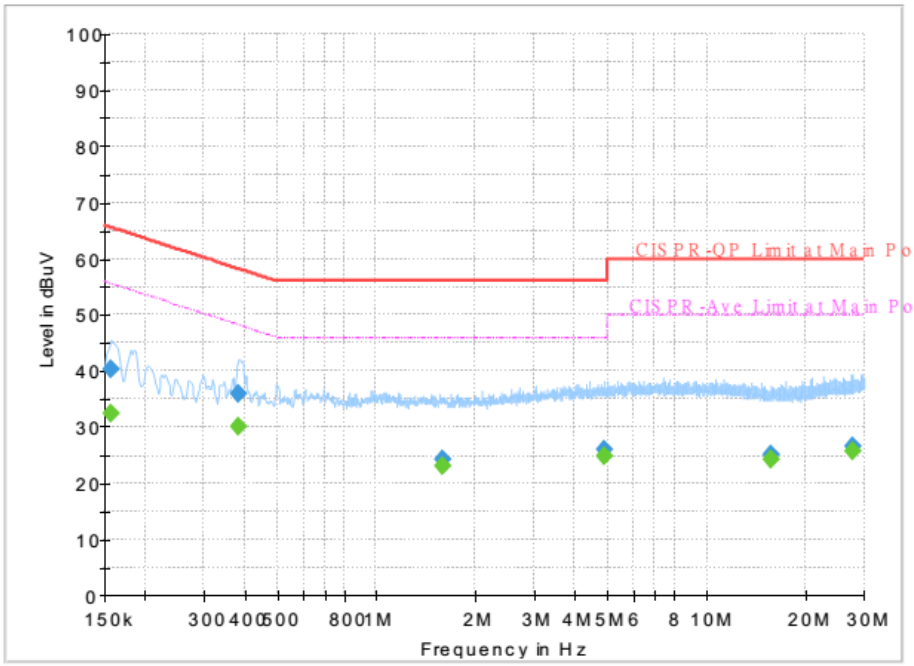
Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**5.2**

Uncertainty of Radiated Emission Measurement (18000 MHz ~ 40000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**5.3**

Appendix A. AC Conducted Emission Test Results

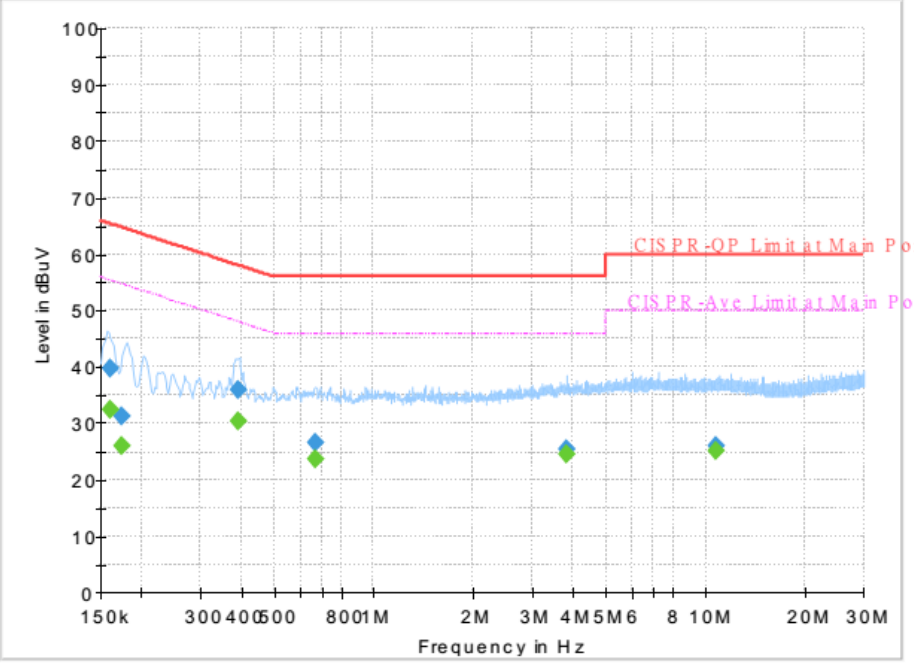
Test Mode :	Mode 1	Temperature :	21~24℃
Test Engineer :	Tom Lee and Howard Huang	Relative Humidity :	42~50%
Test Voltage :	120Vac / 60Hz	Phase :	Line



Final_Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.156570	---	32.50	55.64	23.14	L1	OFF	19.6
0.156570	40.27	---	65.64	25.37	L1	OFF	19.6
0.381750	---	30.03	48.24	18.21	L1	OFF	19.6
0.381750	35.92	---	58.24	22.32	L1	OFF	19.6
1.585140	---	22.96	46.00	23.04	L1	OFF	19.6
1.585140	24.28	---	56.00	31.72	L1	OFF	19.6
4.889760	---	24.96	46.00	21.04	L1	OFF	19.8
4.889760	25.98	---	56.00	30.02	L1	OFF	19.8
15.720180	---	24.39	50.00	25.61	L1	OFF	20.2
15.720180	25.27	---	60.00	34.73	L1	OFF	20.2
27.611250	---	25.60	50.00	24.40	L1	OFF	20.6
27.611250	26.47	---	60.00	33.53	L1	OFF	20.6

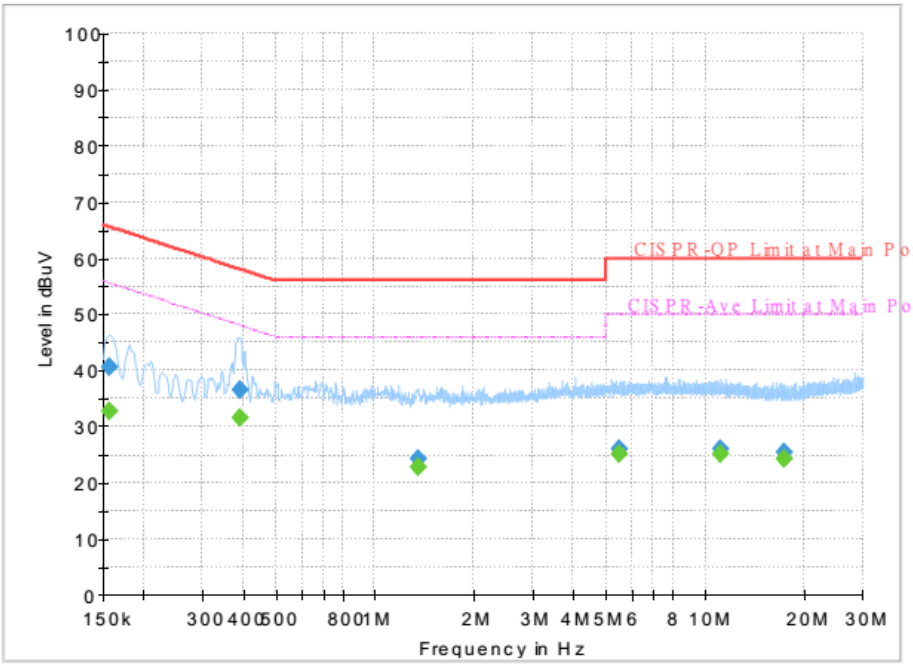
Test Mode :	Mode 1	Temperature :	21~24℃
Test Engineer :	Tom Lee and Howard Huang	Relative Humidity :	42~50%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral



Final_Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.160620	---	32.31	55.43	23.12	N	OFF	19.6
0.160620	39.77	---	65.43	25.66	N	OFF	19.6
0.174750	---	25.99	54.73	28.74	N	OFF	19.6
0.174750	31.29	---	64.73	33.44	N	OFF	19.6
0.390390	---	30.37	48.06	17.69	N	OFF	19.6
0.390390	36.00	---	58.06	22.06	N	OFF	19.6
0.664980	---	23.65	46.00	22.35	N	OFF	19.6
0.664980	26.47	---	56.00	29.53	N	OFF	19.6
3.811650	---	24.58	46.00	21.42	N	OFF	19.7
3.811650	25.53	---	56.00	30.47	N	OFF	19.7
10.704300	---	25.09	50.00	24.91	N	OFF	20.1
10.704300	26.10	---	60.00	33.90	N	OFF	20.1

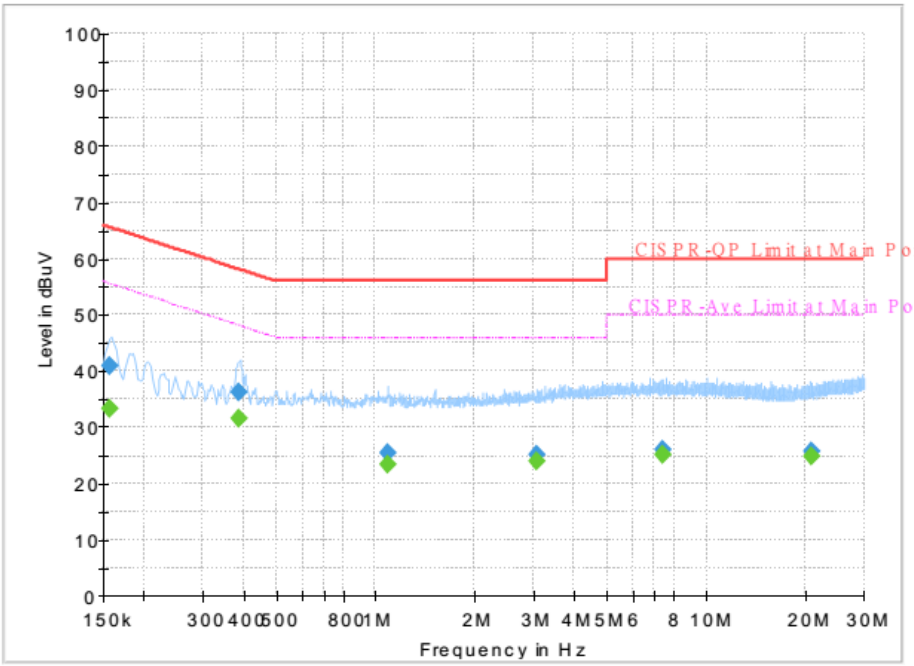
Test Mode :	Mode 2	Temperature :	21~24℃
Test Engineer :	Tom Lee and Howard Huang	Relative Humidity :	42~50%
Test Voltage :	120Vac / 60Hz	Phase :	Line



Final_Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.156570	---	32.62	55.64	23.02	L1	OFF	19.6
0.156570	40.74	---	65.64	24.90	L1	OFF	19.6
0.388500	---	31.48	48.10	16.62	L1	OFF	19.6
0.388500	36.43	---	58.10	21.67	L1	OFF	19.6
1.353030	---	22.81	46.00	23.19	L1	OFF	19.6
1.353030	24.35	---	56.00	31.65	L1	OFF	19.6
5.489250	---	25.02	50.00	24.98	L1	OFF	19.8
5.489250	25.89	---	60.00	34.11	L1	OFF	19.8
11.143680	---	25.05	50.00	24.95	L1	OFF	20.1
11.143680	26.09	---	60.00	33.91	L1	OFF	20.1
17.434230	---	24.35	50.00	25.65	L1	OFF	20.3
17.434230	25.30	---	60.00	34.70	L1	OFF	20.3

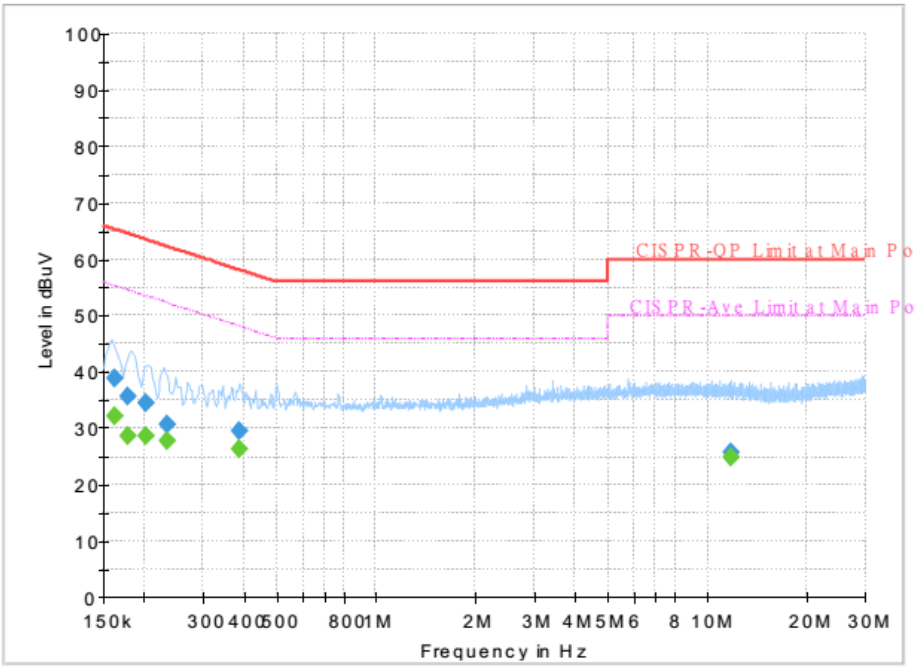
Test Mode :	Mode 2	Temperature :	21~24℃
Test Engineer :	Tom Lee and Howard Huang	Relative Humidity :	42~50%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral



Final_Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.157650	---	33.25	55.59	22.34	N	OFF	19.6
0.157650	41.04	---	65.59	24.55	N	OFF	19.6
0.387060	---	31.67	48.13	16.46	N	OFF	19.6
0.387060	36.40	---	58.13	21.73	N	OFF	19.6
1.093380	---	23.35	46.00	22.65	N	OFF	19.6
1.093380	25.42	---	56.00	30.58	N	OFF	19.6
3.079500	---	23.85	46.00	22.15	N	OFF	19.7
3.079500	25.13	---	56.00	30.87	N	OFF	19.7
7.428750	---	25.14	50.00	24.86	N	OFF	20.0
7.428750	25.99	---	60.00	34.01	N	OFF	20.0
20.861250	---	24.86	50.00	25.14	N	OFF	20.4
20.861250	25.69	---	60.00	34.31	N	OFF	20.4

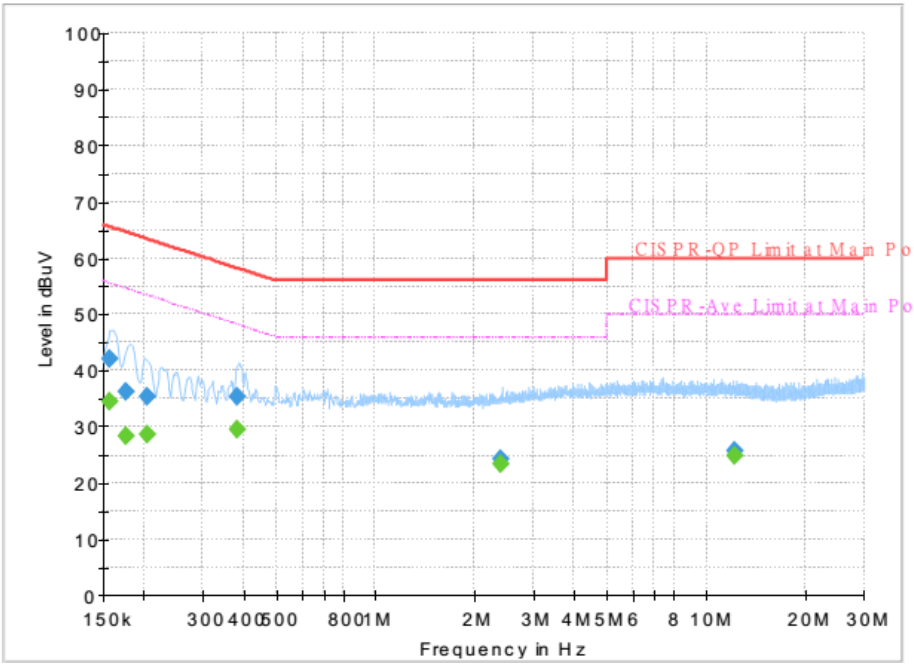
Test Mode :	Mode 3	Temperature :	21~24℃
Test Engineer :	Tom Lee and Howard Huang	Relative Humidity :	42~50%
Test Voltage :	120Vac / 60Hz	Phase :	Line



Final_Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.161790	---	32.15	55.37	23.22	L1	OFF	19.6
0.161790	38.90	---	65.37	26.47	L1	OFF	19.6
0.177000	---	28.79	54.63	25.84	L1	OFF	19.6
0.177000	35.73	---	64.63	28.90	L1	OFF	19.6
0.202740	---	28.57	53.50	24.93	L1	OFF	19.6
0.202740	34.56	---	63.50	28.94	L1	OFF	19.6
0.233070	---	27.87	52.34	24.47	L1	OFF	19.6
0.233070	30.66	---	62.34	31.68	L1	OFF	19.6
0.384360	---	26.19	48.19	22.00	L1	OFF	19.6
0.384360	29.49	---	58.19	28.70	L1	OFF	19.6
11.810580	---	24.97	50.00	25.03	L1	OFF	20.1
11.810580	25.86	---	60.00	34.14	L1	OFF	20.1

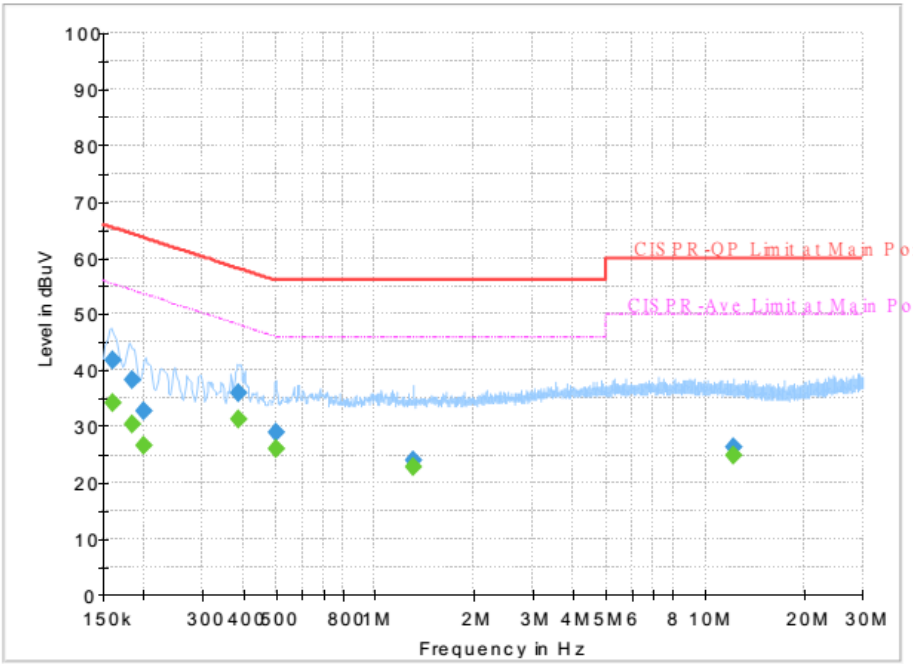
Test Mode :	Mode 3	Temperature :	21~24℃
Test Engineer :	Tom Lee and Howard Huang	Relative Humidity :	42~50%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral



Final_Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.157380	---	34.56	55.60	21.04	N	OFF	19.6
0.157380	42.07	---	65.60	23.53	N	OFF	19.6
0.176640	---	28.40	54.64	26.24	N	OFF	19.6
0.176640	36.32	---	64.64	28.32	N	OFF	19.6
0.204000	---	28.74	53.45	24.71	N	OFF	19.6
0.204000	35.36	---	63.45	28.09	N	OFF	19.6
0.381750	---	29.42	48.24	18.82	N	OFF	19.6
0.381750	35.26	---	58.24	22.98	N	OFF	19.6
2.404500	---	23.33	46.00	22.67	N	OFF	19.6
2.404500	24.38	---	56.00	31.62	N	OFF	19.6
12.264000	---	24.91	50.00	25.09	N	OFF	20.2
12.264000	25.85	---	60.00	34.15	N	OFF	20.2

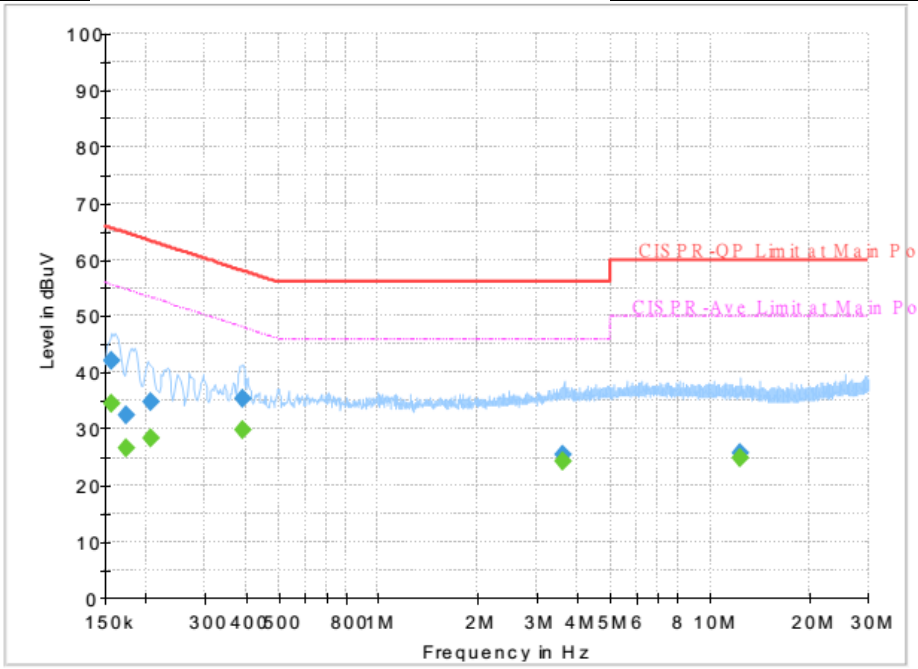
Test Mode :	Mode 4	Temperature :	21~24℃
Test Engineer :	Tom Lee and Howard Huang	Relative Humidity :	42~50%
Test Voltage :	120Vac / 60Hz	Phase :	Line



Final_Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.160170	---	34.26	55.46	21.20	L1	OFF	19.6
0.160170	41.86	---	65.46	23.60	L1	OFF	19.6
0.183750	---	30.49	54.31	23.82	L1	OFF	19.6
0.183750	38.25	---	64.31	26.06	L1	OFF	19.6
0.199410	---	26.50	53.64	27.14	L1	OFF	19.6
0.199410	32.89	---	63.64	30.75	L1	OFF	19.6
0.386250	---	31.42	48.14	16.72	L1	OFF	19.6
0.386250	35.98	---	58.14	22.16	L1	OFF	19.6
0.499470	---	26.01	46.01	20.00	L1	OFF	19.6
0.499470	28.94	---	56.01	27.07	L1	OFF	19.6
1.311000	---	22.72	46.00	23.28	L1	OFF	19.6
1.311000	23.88	---	56.00	32.12	L1	OFF	19.6
12.140250	---	24.91	50.00	25.09	L1	OFF	20.1
12.140250	26.18	---	60.00	33.82	L1	OFF	20.1

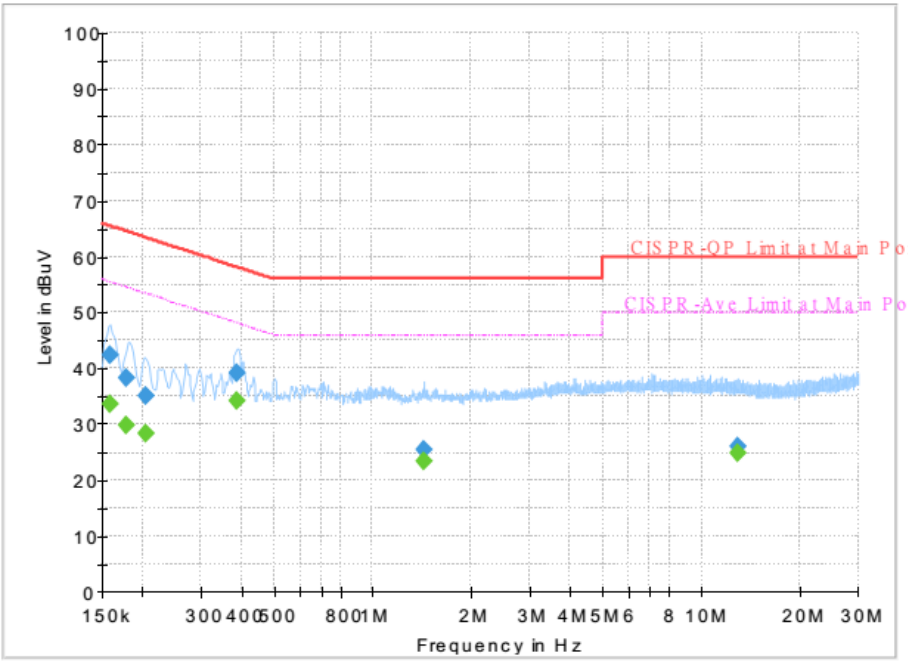
Test Mode :	Mode 4	Temperature :	21~24℃
Test Engineer :	Tom Lee and Howard Huang	Relative Humidity :	42~50%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral



Final_Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.157650	---	34.64	55.59	20.95	N	OFF	19.6
0.157650	42.09	---	65.59	23.50	N	OFF	19.6
0.174750	---	26.62	54.73	28.11	N	OFF	19.6
0.174750	32.53	---	64.73	32.20	N	OFF	19.6
0.205980	---	28.23	53.37	25.14	N	OFF	19.6
0.205980	34.75	---	63.37	28.62	N	OFF	19.6
0.391290	---	29.68	48.04	18.36	N	OFF	19.6
0.391290	35.42	---	58.04	22.62	N	OFF	19.6
3.622200	---	24.39	46.00	21.61	N	OFF	19.7
3.622200	25.34	---	56.00	30.66	N	OFF	19.7
12.273090	---	24.94	50.00	25.06	N	OFF	20.2
12.273090	25.79	---	60.00	34.21	N	OFF	20.2

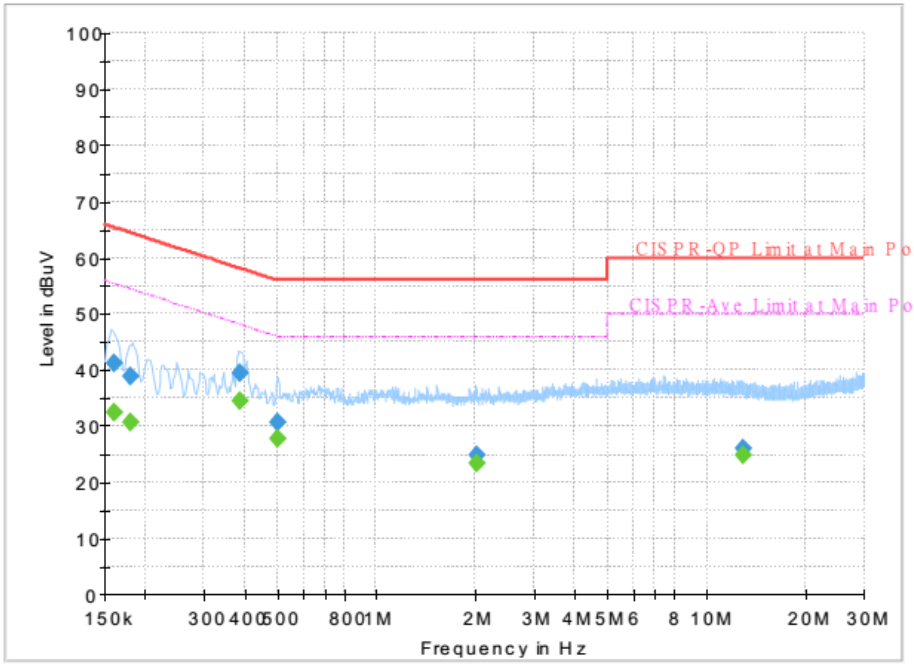
Test Mode :	Mode 5	Temperature :	21~24℃
Test Engineer :	Tom Lee and Howard Huang	Relative Humidity :	42~50%
Test Voltage :	120Vac / 60Hz	Phase :	Line



Final_Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.158010	---	33.68	55.57	21.89	L1	OFF	19.6
0.158010	42.50	---	65.57	23.07	L1	OFF	19.6
0.178620	---	29.69	54.55	24.86	L1	OFF	19.6
0.178620	38.40	---	64.55	26.15	L1	OFF	19.6
0.205080	---	28.30	53.40	25.10	L1	OFF	19.6
0.205080	35.19	---	63.40	28.21	L1	OFF	19.6
0.386250	---	34.34	48.14	13.80	L1	OFF	19.6
0.386250	39.19	---	58.14	18.95	L1	OFF	19.6
1.432500	---	23.44	46.00	22.56	L1	OFF	19.6
1.432500	25.48	---	56.00	30.52	L1	OFF	19.6
12.970500	---	24.83	50.00	25.17	L1	OFF	20.2
12.970500	26.01	---	60.00	33.99	L1	OFF	20.2

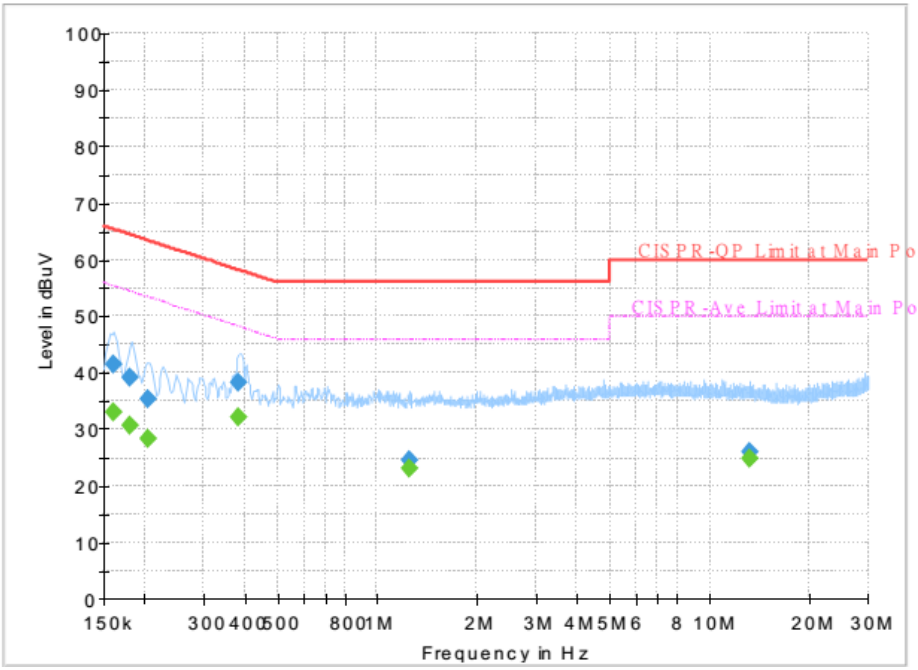
Test Mode :	Mode 5	Temperature :	21~24℃
Test Engineer :	Tom Lee and Howard Huang	Relative Humidity :	42~50%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral



Final_Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.161250	---	32.33	55.40	23.07	N	OFF	19.6
0.161250	41.15	---	65.40	24.25	N	OFF	19.6
0.180600	---	30.57	54.46	23.89	N	OFF	19.6
0.180600	38.88	---	64.46	25.58	N	OFF	19.6
0.387870	---	34.40	48.11	13.71	N	OFF	19.6
0.387870	39.42	---	58.11	18.69	N	OFF	19.6
0.501090	---	27.91	46.00	18.09	N	OFF	19.6
0.501090	30.78	---	56.00	25.22	N	OFF	19.6
2.006250	---	23.31	46.00	22.69	N	OFF	19.6
2.006250	24.80	---	56.00	31.20	N	OFF	19.6
12.837750	---	24.89	50.00	25.11	N	OFF	20.2
12.837750	26.07	---	60.00	33.93	N	OFF	20.2

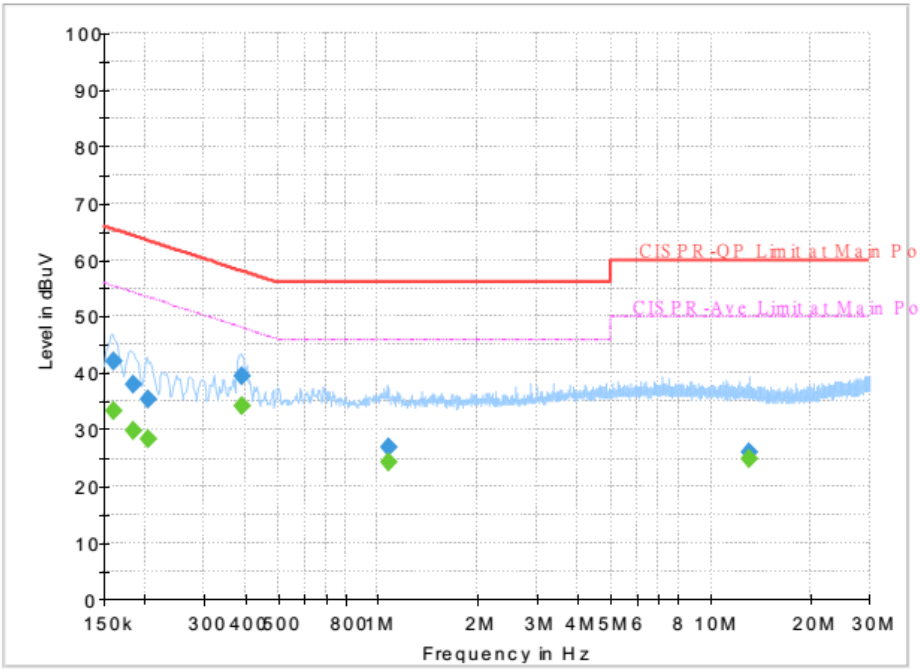
Test Mode :	Mode 6	Temperature :	21~24℃
Test Engineer :	Tom Lee and Howard Huang	Relative Humidity :	42~50%
Test Voltage :	120Vac / 60Hz	Phase :	Line



Final_Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.160710	---	32.90	55.43	22.53	L1	OFF	19.6
0.160710	41.63	---	65.43	23.80	L1	OFF	19.6
0.180690	---	30.64	54.45	23.81	L1	OFF	19.6
0.180690	39.16	---	64.45	25.29	L1	OFF	19.6
0.203820	---	28.48	53.45	24.97	L1	OFF	19.6
0.203820	35.30	---	63.45	28.15	L1	OFF	19.6
0.381750	---	32.12	48.24	16.12	L1	OFF	19.6
0.381750	38.38	---	58.24	19.86	L1	OFF	19.6
1.252770	---	23.06	46.00	22.94	L1	OFF	19.6
1.252770	24.63	---	56.00	31.37	L1	OFF	19.6
13.267950	---	24.82	50.00	25.18	L1	OFF	20.2
13.267950	25.91	---	60.00	34.09	L1	OFF	20.2

Test Mode :	Mode 6	Temperature :	21~24℃
Test Engineer :	Tom Lee and Howard Huang	Relative Humidity :	42~50%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral



Final_Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.160170	---	33.21	55.46	22.25	N	OFF	19.6
0.160170	41.98	---	65.46	23.48	N	OFF	19.6
0.183750	---	29.73	54.31	24.58	N	OFF	19.6
0.183750	37.99	---	64.31	26.32	N	OFF	19.6
0.203010	---	28.28	53.49	25.21	N	OFF	19.6
0.203010	35.25	---	63.49	28.24	N	OFF	19.6
0.389040	---	34.09	48.08	13.99	N	OFF	19.6
0.389040	39.36	---	58.08	18.72	N	OFF	19.6
1.074750	---	24.15	46.00	21.85	N	OFF	19.6
1.074750	26.95	---	56.00	29.05	N	OFF	19.6
13.110000	---	24.83	50.00	25.17	N	OFF	20.2
13.110000	25.89	---	60.00	34.11	N	OFF	20.2

Appendix B. Radiated Spurious Emission

Test Engineer :	Jesse Wang, Stan Hsieh, and Ken Wu	Temperature :	23~26°C
		Relative Humidity :	58~62%

<Antenna 1 (DKRE Port 1) + DKRE for Sample 1>

902.75MHz

UHF RFID_Tx (30MHz ~ 1GHz @ 3m)

ANT 1	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Port 1				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
		(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
902.75MHz		97.77	26.85	-16.65	43.5	39.52	15.65	1.65	29.97	-	-	P	H
		127.47	28.01	-15.49	43.5	38.45	17.63	1.89	29.96	-	-	P	H
		145.56	29.77	-13.73	43.5	40.43	17.27	2.02	29.95	-	-	P	H
		848.8	33.23	-12.77	46	28.81	28.69	4.96	29.23	-	-	P	H
	*	902.75	117.77	-	-	112.76	28.85	5.13	28.97	-	-	P	H
		951.7	33.73	-12.27	46	26.85	30.31	5.26	28.69	100	0	P	H
		979.7	34.45	-19.55	54	27.44	30.2	5.34	28.53	-	-	P	H
		31.62	33.47	-6.53	40	38.96	23.57	0.95	30.01	100	0	P	V
		38.64	29.31	-10.69	40	38.39	19.87	1.05	30	-	-	P	V
		121.8	32.53	-10.97	43.5	43.19	17.45	1.85	29.96	-	-	P	V
		790	30.81	-15.19	46	27.63	27.84	4.81	29.47	-	-	P	V
	*	902.75	117.83	-	-	112.82	28.85	5.13	28.97	-	-	P	V
		955.2	33.62	-12.38	46	26.49	30.53	5.27	28.67	-	-	P	V
		970.6	33.99	-20.01	54	26.6	30.65	5.32	28.58	-	-	P	V

Remark	1. No other spurious found. 2. All results are PASS against limit line.

902.75MHz

UHF RFID _Tx (1GHz ~ 10GHz @ 3m)

ANT 1	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Port 1				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
902.75MHz		2708.25	50.53	-23.47	74	68.76	32.5	8.44	59.66	100	0	P	H
		3611	37.55	-36.45	74	54.29	32.97	9.72	59.91	100	0	P	H
		2708.25	51.74	-22.26	74	69.97	32.5	8.44	59.66	100	193	P	V
		2708.25	50.23	-3.77	54	68.46	32.5	8.44	59.66	100	193	A	V
		3611	37.74	-36.26	74	54.48	32.97	9.72	59.91	100	0	P	V

Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.

914.75MHz

UHF RFID_Tx (30MHz ~ 1GHz @ 3m)

ANT 1	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Port 1				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
		(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
914.75MHz		98.04	26.98	-16.52	43.5	39.65	15.65	1.65	29.97	-	-	P	H
		127.74	28.39	-15.11	43.5	38.91	17.55	1.89	29.96	-	-	P	H
		148.8	28.52	-14.98	43.5	39.22	17.2	2.05	29.95	-	-	P	H
		838.3	34.43	-11.57	46	30.39	28.38	4.93	29.27	-	-	P	H
	*	914.75	117.85	-	-	112.7	28.89	5.16	28.9	-	-	P	H
		953.1	34.66	-11.34	46	27.65	30.42	5.27	28.68	100	0	P	H
		991.6	35.32	-18.68	54	28.46	29.94	5.38	28.46	-	-	P	H
		30.54	33.79	-6.21	40	38.74	24.12	0.94	30.01	100	0	P	V
		38.91	29.45	-10.55	40	38.53	19.87	1.05	30	-	-	P	V
		122.61	32.71	-10.79	43.5	43.36	17.45	1.86	29.96	-	-	P	V
		848.8	33.2	-12.8	46	28.78	28.69	4.96	29.23	-	-	P	V
	*	914.75	117.9	-	-	112.75	28.89	5.16	28.9	-	-	P	V
		953.1	34.56	-11.44	46	27.55	30.42	5.27	28.68	-	-	P	V
		991.6	33.61	-20.39	54	26.75	29.94	5.38	28.46	-	-	P	V
Remark	1. No other spurious found. 2. All results are PASS against limit line.												

914.75MHz

UHF RFID _Tx (1GHz ~ 10GHz @ 3m)

ANT 1	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Port 1				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
		(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
914.75MHz		2745	49.76	-24.24	74	67.96	32.5	8.49	59.66	100	0	P	H
		3660	38.29	-35.71	74	54.79	33.1	9.79	59.88	100	0	P	H
		2745	51.8	-22.2	74	70	32.5	8.49	59.66	107	136	P	V
		2745	50.71	-3.29	54	68.91	32.5	8.49	59.66	107	136	A	V
		3660	37.48	-36.52	74	53.98	33.1	9.79	59.88	100	0	P	V

Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.

927.25MHz

UHF RFID_Tx (30MHz ~ 1GHz @ 3m)

ANT 1	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Port 1				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
927.25MHz		96.69	28.05	-15.45	43.5	40.71	15.67	1.64	29.97	-	-	P	H
		126.93	29.45	-14.05	43.5	39.89	17.63	1.89	29.96	-	-	P	H
		145.29	29.91	-13.59	43.5	40.57	17.27	2.02	29.95	-	-	P	H
		768.3	34.47	-11.53	46	31.48	27.79	4.72	29.52	100	0	P	H
	*	927.25	118.27	-	-	112.71	29.19	5.2	28.83	-	-	P	H
		955.2	33.99	-12.01	46	26.86	30.53	5.27	28.67	-	-	P	H
		965.7	34.65	-19.35	54	27.25	30.71	5.3	28.61	-	-	P	H
		31.62	33.15	-6.85	40	38.64	23.57	0.95	30.01	100	0	P	V
		38.64	29.06	-10.94	40	38.14	19.87	1.05	30	-	-	P	V
		124.77	32.82	-10.68	43.5	43.45	17.46	1.87	29.96	-	-	P	V
		768.3	31.67	-14.33	46	28.68	27.79	4.72	29.52	-	-	P	V
		850.2	33.85	-12.15	46	29.37	28.74	4.96	29.22	-	-	P	V
	*	927.25	118.26	-	-	112.7	29.19	5.2	28.83	-	-	P	V
		975.5	35.73	-18.27	54	28.41	30.54	5.33	28.55	-	-	P	V

Remark	1. No other spurious found. 2. All results are PASS against limit line.

927.25MHz

UHF RFID _Tx (1GHz ~ 10GHz @ 3m)

ANT 1	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Port 1				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
		(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
927.25MHz		2781.75	46.86	-27.14	74	65.11	32.43	8.54	59.67	100	0	P	H
		3709	38.13	-35.87	74	54.63	33	9.85	59.85	100	0	P	H
		2781.75	51.94	-22.06	74	70.19	32.43	8.54	59.67	304	216	P	V
		2781.75	50.85	-3.15	54	69.1	32.43	8.54	59.67	304	216	A	V
		3709	38.02	-35.98	74	54.52	33	9.85	59.85	100	0	P	V

Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.

<Antenna 1 (DKRE Port 2) + DKRE for Sample 1>

927.25MHz

UHF RFID_Tx (30MHz ~ 1GHz @ 3m)

ANT 1	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Port 2				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
		(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
		98.85	27.69	-15.81	43.5	40.25	15.75	1.66	29.97	-	-	P	H
		123.69	29.53	-13.97	43.5	40.09	17.53	1.87	29.96	-	-	P	H
		146.64	29.76	-13.74	43.5	40.39	17.29	2.03	29.95	-	-	P	H
		850.2	34.52	-11.48	46	30.04	28.74	4.96	29.22	100	0	P	H
	*	927.25	118.19	-	-	112.63	29.19	5.2	28.83	-	-	P	H
		955.9	34.23	-11.77	46	27.12	30.5	5.28	28.67	-	-	P	H
		965.7	34.67	-19.33	54	27.27	30.71	5.3	28.61	-	-	P	H
													H
													H
													H
													H
													H
927.25MHz		31.35	33.45	-6.55	40	38.39	24.12	0.95	30.01	100	0	P	V
		39.45	31.34	-8.66	40	40.88	19.4	1.06	30	-	-	P	V
		120.45	33.09	-10.41	43.5	43.71	17.5	1.84	29.96	-	-	P	V
		850.2	33.63	-12.37	46	29.15	28.74	4.96	29.22	-	-	P	V
	*	927.25	118.26	-	-	112.7	29.19	5.2	28.83	-	-	P	V
		955.9	34.41	-11.59	46	27.3	30.5	5.28	28.67	-	-	P	V
		965.7	34.7	-19.3	54	27.3	30.71	5.3	28.61	-	-	P	V
													V
													V
													V
													V
													V

Remark	1. No other spurious found. 2. All results are PASS against limit line.

927.25MHz

UHF RFID _Tx (1GHz ~ 10GHz @ 3m)

ANT 1	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Port 2				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
		(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
927.25MHz		2781.75	47.03	-26.97	74	65.28	32.43	8.54	59.67	100	0	P	H
		3709	38.57	-35.43	74	55.07	33	9.85	59.85	100	0	P	H
												P	H
												P	H
												P	H
												P	H
													H
		2781.75	51.32	-22.68	74	69.57	32.43	8.54	59.67	108	138	P	V
		2781.75	49.25	-4.75	54	67.5	32.43	8.54	59.67	108	138	A	V
		3709	38.68	-35.32	74	55.18	33	9.85	59.85	100	0	P	V
												P	V
												P	V
												P	V
												P	V

Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.

<Antenna 2 (DKRE Port 1) + DKRE for Sample 1>

902.75MHz

UHF RFID_Tx (30MHz ~ 1GHz @ 3m)

ANT 2	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Port 1				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
		(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
902.75MHz		30	31.96	-8.04	40	36.72	24.32	0.93	30.01	100	0	P	H
		47.55	25.79	-14.21	40	38.98	15.63	1.17	29.99	-	-	P	H
		122.61	29.46	-14.04	43.5	40.11	17.45	1.86	29.96	-	-	P	H
		841.1	34.02	-11.98	46	29.85	28.49	4.94	29.26	-	-	P	H
		853.7	34.17	-11.83	46	29.59	28.81	4.97	29.2	-	-	P	H
	*	902.75	80.06	-	-	75.05	28.85	5.13	28.97	-	-	P	H
		948.9	33.9	-12.1	46	27.23	30.12	5.26	28.71	-	-	P	H
		30	31.2	-8.8	40	35.96	24.32	0.93	30.01	-	-	P	V
		39.72	33.15	-6.85	40	42.68	19.4	1.07	30	100	0	P	V
		116.13	31.8	-11.7	43.5	42.57	17.38	1.81	29.96	-	-	P	V
		854.4	32.35	-13.65	46	27.75	28.83	4.97	29.2	-	-	P	V
		888	32.4	-13.6	46	27.64	28.72	5.08	29.04	-	-	P	V
	*	902.75	73.54	-	-	68.53	28.85	5.13	28.97	-	-	P	V
		959.4	33.35	-12.65	46	26.3	30.41	5.29	28.65	-	-	P	V

Remark	1. No other spurious found. 2. All results are PASS against limit line.

902.75MHz

UHF RFID _Tx (1GHz ~ 10GHz @ 3m)

ANT 2	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Port 1				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
		(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
902.75MHz		2708.25	38.29	-35.71	74	56.52	32.5	8.93	59.66	100	0	P	H
		3611	37.7	-36.3	74	54.44	32.97	10.2	59.91	100	0	P	H
		2708.25	37.82	-36.18	74	56.05	32.5	8.93	59.66	100	0	P	V
		3611	38.13	-35.87	74	54.87	32.97	10.2	59.91	100	0	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

914.75MHz

UHF RFID_Tx (30MHz ~ 1GHz @ 3m)

ANT 2	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Port 1				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
914.75MHz		30	31.62	-8.38	40	36.38	24.32	0.93	30.01	100	0	P	H
		122.07	29.41	-14.09	43.5	40.07	17.45	1.85	29.96	-	-	P	H
		217.11	18.89	-27.11	46	31.24	15.09	2.48	29.92	-	-	P	H
		729.1	35.83	-10.17	46	33.69	27.17	4.58	29.61	-	-	P	H
		851.6	33.37	-12.63	46	28.85	28.76	4.97	29.21	-	-	P	H
	*	914.75	80.15	-	-	75	28.89	5.16	28.9	-	-	P	H
		958	33.68	-12.32	46	26.61	30.44	5.28	28.65	-	-	P	H
		39.45	33.93	-6.07	40	43.47	19.4	1.06	30	100	0	P	V
		65.37	27.4	-12.6	40	44.15	11.87	1.36	29.98	-	-	P	V
		120.18	31.6	-11.9	43.5	42.22	17.5	1.84	29.96	-	-	P	V
		806.1	30.62	-15.38	46	27.47	27.71	4.86	29.42	-	-	P	V
		836.2	32.96	-13.04	46	29.02	28.29	4.93	29.28	-	-	P	V
	*	914.75	73.1	-	-	67.95	28.89	5.16	28.9	-	-	P	V
		958	34.27	-11.73	46	27.2	30.44	5.28	28.65	-	-	P	V
Remark	1. No other spurious found. 2. All results are PASS against limit line.												

914.75MHz

UHF RFID _Tx (1GHz ~ 10GHz @ 3m)

ANT 2	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Port 1				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
		(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
914.75MHz		2745	38.22	-35.78	74	56.42	32.5	8.49	59.66	100	0	P	H
		3660	37.92	-36.08	74	54.42	33.1	9.79	59.88	100	0	P	H
		2745	38.04	-35.96	74	56.24	32.5	8.49	59.66	100	0	P	V
		3660	38.74	-35.26	74	55.24	33.1	9.79	59.88	100	0	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

927.25MHz

UHF RFID_Tx (30MHz ~ 1GHz @ 3m)

ANT 2	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Port 1				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
927.25MHz		30	31.99	-8.01	40	36.75	24.32	0.93	30.01	100	0	P	H
		120.18	28.5	-15	43.5	39.12	17.5	1.84	29.96	-	-	P	H
		255.72	20.54	-25.46	46	28.77	18.99	2.69	29.91	-	-	P	H
		568.1	27.98	-18.02	46	27.81	25.96	4.05	29.84	-	-	P	H
		746.6	31.55	-14.45	46	28.71	27.78	4.63	29.57	-	-	P	H
	*	927.25	80.18	-	-	74.62	29.19	5.2	28.83	-	-	P	H
		953.1	33.81	-12.19	46	26.8	30.42	5.27	28.68	-	-	P	H
		39.45	33.01	-6.99	40	42.55	19.4	1.06	30	100	0	P	V
		118.02	31.96	-11.54	43.5	42.74	17.36	1.82	29.96	-	-	P	V
		258.42	20.2	-25.8	46	28.14	19.26	2.71	29.91	-	-	P	V
		826.4	31.57	-14.43	46	28.21	27.78	4.91	29.33	-	-	P	V
		856.5	32.28	-13.72	46	27.63	28.86	4.98	29.19	-	-	P	V
	*	927.25	73.42	-	-	67.86	29.19	5.2	28.83	-	-	P	V
		948.9	33.59	-12.41	46	26.92	30.12	5.26	28.71	-	-	P	V
Remark	1. No other spurious found. 2. All results are PASS against limit line.												

927.25MHz

UHF RFID _Tx (1GHz ~ 10GHz @ 3m)

ANT 2	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Port 1				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
		(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
927.25MHz		2781.75	38.78	-35.22	74	57.03	32.43	8.99	59.67	100	0	P	H
		3709	39.93	-34.07	74	56.43	33	10.35	59.85	100	0	P	H
		2781.75	40.15	-33.85	74	58.4	32.43	8.99	59.67	100	0	P	V
		3709	38.75	-35.25	74	55.25	33	10.35	59.85	100	0	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

<Antenna 2 (DKRE Port 2) + DKRE for Sample 1>

914.75MHz

UHF RFID_Tx (30MHz ~ 1GHz @ 3m)

ANT 2	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Port 2				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
		(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
914.75MHz		30.54	22.29	-17.71	40	27.24	24.12	0.94	30.01	-	-	P	H
		65.64	23.12	-16.88	40	39.73	12	1.37	29.98	-	-	P	H
		122.61	30.6	-12.9	43.5	41.25	17.45	1.86	29.96	-	-	P	H
		831.3	30.75	-15.25	46	27.09	28.04	4.92	29.3	-	-	P	H
		867.7	32.42	-13.58	46	27.65	28.89	5.02	29.14	-	-	P	H
	*	914.75	78.42	-	-	73.27	28.89	5.16	28.9	-	-	P	H
		954.5	33.39	-12.61	46	26.31	30.48	5.27	28.67	100	0	P	H
		30	33.77	-6.23	40	38.53	24.32	0.93	30.01	-	-	P	V
		41.88	33.83	-6.17	40	44.3	18.44	1.09	30	100	0	P	V
		115.86	30.54	-12.96	43.5	41.32	17.38	1.8	29.96	-	-	P	V
		820.8	30.65	-15.35	46	27.41	27.69	4.9	29.35	-	-	P	V
		869.8	32.34	-13.66	46	27.55	28.9	5.02	29.13	-	-	P	V
	*	914.75	76.64	-	-	71.49	28.89	5.16	28.9	-	-	P	V
		958.7	33.71	-12.29	46	26.64	30.44	5.28	28.65	-	-	P	V

Remark	1. No other spurious found. 2. All results are PASS against limit line.

914.75MHz

UHF RFID _Tx (1GHz ~ 10GHz @ 3m)

ANT 2	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Port 2				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
		(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
914.75MHz		2745	38.59	-35.41	74	56.79	32.5	8.96	59.66	100	0	P	H
		3660	38.72	-35.28	74	55.22	33.1	10.28	59.88	100	0	P	H
		2745	38.95	-35.05	74	57.15	32.5	8.96	59.66	100	0	P	V
		3660	40.08	-33.92	74	56.58	33.1	10.28	59.88	100	0	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

<Antenna 1 + DKRE + Carrier board for Sample 2>

902.75MHz

UHF RFID_Tx (30MHz ~ 1GHz @ 3m)

ANT 1	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Port 2				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
		(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
902.75MHz		30	30.87	-9.13	40	35.63	24.32	0.93	30.01	100	0	P	H
		45.12	26.48	-13.52	40	39.05	16.29	1.13	29.99	-	-	P	H
		82.11	27.85	-12.15	40	42.78	13.53	1.52	29.98	-	-	P	H
		825.7	33.4	-12.6	46	30.09	27.73	4.91	29.33	-	-	P	H
	*	902.75	117.66	-	-	112.65	28.85	5.13	28.97	-	-	P	H
		941.2	34.84	-11.16	46	28.6	29.75	5.24	28.75	-	-	P	H
		979.7	34.6	-19.4	54	27.59	30.2	5.34	28.53	-	-	P	H
		30	33.83	-6.17	40	38.59	24.32	0.93	30.01	100	0	P	V
		49.17	24.99	-15.01	40	39.01	14.78	1.19	29.99	-	-	P	V
		120.72	30.45	-13.05	43.5	41.13	17.43	1.85	29.96	-	-	P	V
		825.7	31.71	-14.29	46	28.4	27.73	4.91	29.33	-	-	P	V
	*	902.75	117.59	-	-	112.58	28.85	5.13	28.97	-	-	P	V
		951	34.17	-11.83	46	27.34	30.26	5.26	28.69	-	-	P	V
		976.9	34.38	-19.62	54	27.13	30.45	5.34	28.54	-	-	P	V

Remark	1. No other spurious found. 2. All results are PASS against limit line.

902.75MHz

UHF RFID _Tx (1GHz ~ 10GHz @ 3m)

ANT 1	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Port 2				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
		(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
902.75MHz		2708	51.42	-22.58	74	69.65	32.5	8.93	59.66	201	234	P	H
		2708	49.91	-4.09	54	68.14	32.5	8.93	59.66	201	234	A	H
		3611	39.2	-34.8	74	55.94	32.97	10.2	59.91	100	0	P	H
		2708	50.91	-23.09	74	69.14	32.5	8.93	59.66	204	235	P	V
		2708	50.07	-3.93	54	68.3	32.5	8.93	59.66	204	235	A	V
		3611	38.52	-35.48	74	55.26	32.97	10.2	59.91	100	0	P	V

Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.

914.75MHz

UHF RFID_Tx (30MHz ~ 1GHz @ 3m)

ANT 1	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Port 2				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
		(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
914.75MHz		30	28.44	-11.56	40	33.2	24.32	0.93	30.01	100	0	P	H
		47.55	25.81	-14.19	40	39	15.63	1.17	29.99	-	-	P	H
		127.74	29.61	-13.89	43.5	40.13	17.55	1.89	29.96	-	-	P	H
		838.3	32.55	-13.45	46	28.51	28.38	4.93	29.27	-	-	P	H
	*	914.75	117.77	-	-	112.62	28.89	5.16	28.9	-	-	P	H
		953.1	33.92	-12.08	46	26.91	30.42	5.27	28.68	-	-	P	H
		976.9	34.01	-19.99	54	26.76	30.45	5.34	28.54	-	-	P	H
		30	33.3	-6.7	40	38.06	24.32	0.93	30.01	100	0	P	V
		62.4	30.46	-9.54	40	47.38	11.73	1.33	29.98	-	-	P	V
		127.2	30.32	-13.18	43.5	40.76	17.63	1.89	29.96	-	-	P	V
		853	35.17	-10.83	46	30.62	28.78	4.97	29.2	-	-	P	V
	*	914.75	117.72	-	-	112.57	28.89	5.16	28.9	-	-	P	V
		953.1	35.13	-10.87	46	28.12	30.42	5.27	28.68	-	-	P	V
		977.6	38.15	-15.85	54	30.98	30.37	5.34	28.54	-	-	P	V

Remark	1. No other spurious found. 2. All results are PASS against limit line.

914.75MHz

UHF RFID _Tx (1GHz ~ 10GHz @ 3m)

ANT 1	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Port 2				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
		(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
914.75MHz		2745	51.3	-22.7	74	69.5	32.5	8.96	59.66	355	153	P	H
		2745	49.9	-4.1	54	68.1	32.5	8.96	59.66	355	153	A	H
		3660	41.12	-32.88	74	57.62	33.1	10.28	59.88	100	0	P	H
		2745	51.48	-22.52	74	69.68	32.5	8.96	59.66	294	220	P	V
		2745	50.09	-3.91	54	68.29	32.5	8.96	59.66	294	220	A	V
		3660	39.58	-34.42	74	56.08	33.1	10.28	59.88	100	0	P	V

Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.

927.25MHz

UHF RFID_Tx (30MHz ~ 1GHz @ 3m)

ANT 1	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Port 2				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
927.25MHz		30.27	29.66	-10.34	40	34.42	24.32	0.93	30.01	100	0	P	H
		98.58	27.67	-15.83	43.5	40.23	15.75	1.66	29.97	-	-	P	H
		130.44	30.01	-13.49	43.5	40.47	17.59	1.91	29.96	-	-	P	H
		768.3	31.19	-14.81	46	28.2	27.79	4.72	29.52	-	-	P	H
		825.7	31.61	-14.39	46	28.3	27.73	4.91	29.33	-	-	P	H
		850.2	32.73	-13.27	46	28.25	28.74	4.96	29.22	-	-	P	H
	*	927.25	118	-	-	112.44	29.19	5.2	28.83	-	-	P	H
		30	33.29	-6.71	40	38.05	24.32	0.93	30.01	100	0	P	V
		62.4	31.53	-8.47	40	48.45	11.73	1.33	29.98	-	-	P	V
		127.2	29.92	-13.58	43.5	40.36	17.63	1.89	29.96	-	-	P	V
		839.7	31.62	-14.38	46	27.47	28.48	4.94	29.27	-	-	P	V
		864.2	34.93	-11.07	46	30.19	28.88	5.01	29.15	-	-	P	V
	*	927.25	117.96	-	-	112.4	29.19	5.2	28.83	-	-	P	V
		990.2	36.79	-17.21	54	29.92	29.97	5.37	28.47	-	-	P	V

Remark	1. No other spurious found. 2. All results are PASS against limit line.

927.25MHz

UHF RFID _Tx (1GHz ~ 10GHz @ 3m)

ANT 1	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Port 2				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
		(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
927.25MHz		2781.75	50.91	-23.09	74	69.16	32.43	8.99	59.67	330	158	P	H
		2781.75	49.56	-4.44	54	67.81	32.43	8.99	59.67	330	158	A	H
		3709	40.5	-33.5	74	57	33	10.35	59.85	100	0	P	H
		2781.75	52.36	-21.64	74	70.61	32.43	8.99	59.67	276	213	P	V
		2781.75	50.66	-3.34	54	68.91	32.43	8.99	59.67	276	213	A	V
		3709	35.48	-38.52	74	51.98	33	10.35	59.85	100	0	P	V

Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.

<Antenna 2 + DKRE + Carrier board for Sample 2>

902.75MHz

UHF RFID_Tx (30MHz ~ 1GHz @ 3m)

ANT 2	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Port 2				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
		(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
902.75MHz		30.54	28.21	-11.79	40	33.16	24.12	0.94	30.01	100	0	P	H
		46.74	26.46	-13.54	40	39.34	15.96	1.15	29.99	-	-	P	H
		128.55	30.61	-12.89	43.5	41.24	17.43	1.9	29.96	-	-	P	H
		876.1	31.99	-14.01	46	27.21	28.84	5.04	29.1	-	-	P	H
	*	902.75	77.99	-	-	72.98	28.85	5.13	28.97	-	-	P	H
		934.2	33.15	-12.85	46	27.35	29.37	5.22	28.79	-	-	P	H
		956.6	33.66	-12.34	46	26.54	30.5	5.28	28.66	-	-	P	H
		30	31.03	-8.97	40	35.79	24.32	0.93	30.01	-	-	P	V
		39.45	32.94	-7.06	40	42.48	19.4	1.06	30	100	0	P	V
		128.01	28.97	-14.53	43.5	39.48	17.55	1.9	29.96	-	-	P	V
		850.2	31.99	-14.01	46	27.51	28.74	4.96	29.22	-	-	P	V
		882.4	32.12	-13.88	46	27.27	28.86	5.06	29.07	-	-	P	V
	*	902.75	71.18	-	-	66.17	28.85	5.13	28.97	-	-	P	V
		939.1	34.29	-11.71	46	28.17	29.66	5.23	28.77	-	-	P	V

Remark	1. No other spurious found. 2. All results are PASS against limit line.

902.75MHz

UHF RFID _Tx (1GHz ~ 10GHz @ 3m)

ANT 2	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Port 2				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
		(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
902.75MHz		2708.25	37.28	-36.72	74	55.51	32.5	8.93	59.66	100	0	P	H
		3611	38.04	-35.96	74	54.78	32.97	10.2	59.91	100	0	P	H
		2708.25	38.21	-35.79	74	56.44	32.5	8.93	59.66	100	0	P	V
		3611	37.97	-36.03	74	54.71	32.97	10.2	59.91	100	0	P	V

Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.

914.75MHz

UHF RFID_Tx (30MHz ~ 1GHz @ 3m)

ANT 2	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Port 2				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
		(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
914.75MHz		30	28.98	-11.02	40	33.74	24.32	0.93	30.01	100	0	P	H
		48.9	26.35	-13.65	40	39.97	15.19	1.18	29.99	-	-	P	H
		128.82	31.22	-12.28	43.5	41.85	17.43	1.9	29.96	-	-	P	H
		857.9	31.77	-14.23	46	27.09	28.88	4.99	29.19	-	-	P	H
		890.1	32.4	-13.6	46	27.68	28.67	5.09	29.04	-	-	P	H
	*	914.75	77.99	-	-	72.84	28.89	5.16	28.9	-	-	P	H
		950.3	33.71	-12.29	46	26.89	30.26	5.26	28.7	-	-	P	H
		30	29.45	-10.55	40	34.21	24.32	0.93	30.01	-	-	P	V
		39.18	32.23	-7.77	40	41.3	19.87	1.06	30	100	0	P	V
		128.28	28.94	-14.56	43.5	39.45	17.55	1.9	29.96	-	-	P	V
		819.4	30.52	-15.48	46	27.31	27.68	4.89	29.36	-	-	P	V
		866.3	32.73	-13.27	46	27.98	28.88	5.01	29.14	-	-	P	V
	*	914.75	71.85	-	-	66.66	28.93	5.16	28.9	-	-	P	V
		956.6	33.73	-12.27	46	26.61	30.5	5.28	28.66	-	-	P	V

Remark	1. No other spurious found. 2. All results are PASS against limit line.

914.75MHz

UHF RFID _Tx (1GHz ~ 10GHz @ 3m)

ANT 2	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Port 2				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
		(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
914.75MHz		2745	37.69	-36.31	74	55.89	32.5	8.96	59.66	100	0	P	H
		3660	38.51	-35.49	74	55.01	33.1	10.28	59.88	100	0	P	H
		2745	38.27	-35.73	74	56.47	32.5	8.96	59.66	100	0	P	V
		3660	39.13	-34.87	74	55.63	33.1	10.28	59.88	100	0	P	V

Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.

927.25MHz

UHF RFID_Tx (30MHz ~ 1GHz @ 3m)

ANT 2	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Port 2				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
927.25MHz		30	28.72	-11.28	40	33.48	24.32	0.93	30.01	-	-	P	H
		48.9	26.52	-13.48	40	40.14	15.19	1.18	29.99	-	-	P	H
		128.55	32.23	-11.27	43.5	42.86	17.43	1.9	29.96	100	0	P	H
		683.6	28	-18	46	26.92	26.34	4.44	29.7	-	-	P	H
		764.1	30.64	-15.36	46	27.68	27.79	4.7	29.53	-	-	P	H
		853.7	31.88	-14.12	46	27.3	28.81	4.97	29.2	-	-	P	H
	*	927.25	77.66	-	-	72.1	29.19	5.2	28.83	-	-	P	H
		39.18	33.17	-6.83	40	42.24	19.87	1.06	30	100	0	P	V
		63.21	24.19	-15.81	40	41.07	11.76	1.34	29.98	-	-	P	V
		126.93	30.1	-13.4	43.5	40.54	17.63	1.89	29.96	-	-	P	V
		784.4	31	-15	46	27.89	27.81	4.78	29.48	-	-	P	V
		869.8	31.5	-14.5	46	26.71	28.9	5.02	29.13	-	-	P	V
		892.9	31.88	-14.12	46	27.2	28.6	5.1	29.02	-	-	P	V
	*	927.25	72.61	-	-	67.05	29.19	5.2	28.83	-	-	P	V
Remark	1. No other spurious found. 2. All results are PASS against limit line.												

927.25MHz

UHF RFID _Tx (1GHz ~ 10GHz @ 3m)

ANT 2	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Port 2				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
		(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
927.25MHz		2781.75	37.58	-36.42	74	55.83	32.43	8.99	59.67	100	0	P	H
		3709	38.7	-35.3	74	55.2	33	10.35	59.85	100	0	P	H
		2781.75	39.72	-34.28	74	57.97	32.43	8.99	59.67	100	0	P	V
		3709	38.38	-35.62	74	54.88	33	10.35	59.85	100	0	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Note symbol

*	**Fundamental Frequency** which can be ignored. However, the level of any unwanted emissions shall not exceed the level of the fundamental frequency.
!	Test result is **over limit** line.
P/A	**P**eak or **A**verage
H/V	**H**orizontal or **V**ertical

A calculation example for radiated spurious emission is shown as below:

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11b CH 01 2412MHz		2390	55.45	-18.55	74	54.51	32.22	4.58	35.86	103	308	P	H
		2390	43.54	-10.46	54	42.6	32.22	4.58	35.86	103	308	A	H

1. Path Loss(dB) = Cable loss(dB) + Filter loss(dB) + Attenuator loss(dB)
2. Level(dBμV/m) =

Antenna Factor(dB/m) + Path Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

3. Over Limit(dB) = Level(dBμV/m) – Limit Line(dBμV/m)

For Peak Limit @ 2390MHz:

1. Level(dBμV/m)

= Antenna Factor(dB/m) + Path Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

= 32.22(dB/m) + 4.58(dB) + 54.51(dBμV) – 35.86 (dB)

= 55.45 (dBμV/m)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 55.45(dBμV/m) – 74(dBμV/m)

= -18.55(dB)

For Average Limit @ 2390MHz:

1. Level(dBμV/m)

= Antenna Factor(dB/m) + Path Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

= 32.22(dB/m) + 4.58(dB) + 42.6(dBμV) – 35.86 (dB)

= 43.54 (dBμV/m)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 43.54(dBμV/m) – 54(dBμV/m)

= -10.46(dB)

Both peak and average measured complies with the limit line, so test result is “PASS”.

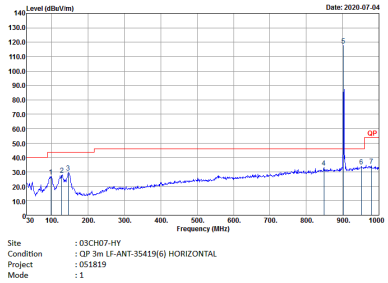
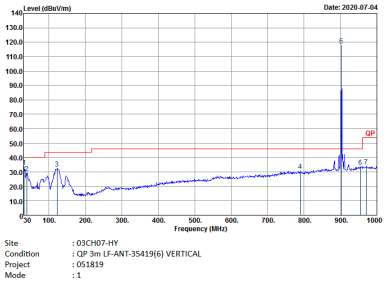
Appendix C. Radiated Spurious Emission Plots

Test Engineer :	Jesse Wang, Stan Hsieh, Ken Wu	Temperature :	23~26°C
		Relative Humidity :	58~62%

<Antenna 1 (DKRE Port 1) + DKRE for Sample 1>

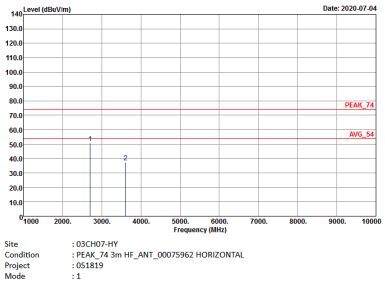
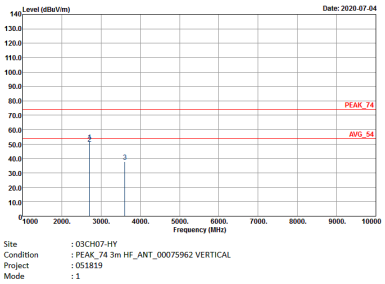
902.75MHz

UHF RFID_Tx (30MHz ~ 1GHz @ 3m)

ANT 1	902.75MHz UHF RFID (30MHz ~ 1GHz @ 3m)	
Port 1	UHF RFID 902.75 MHz	
	Horizontal	Vertical
QP / Peak		

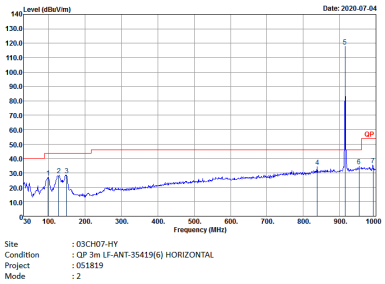
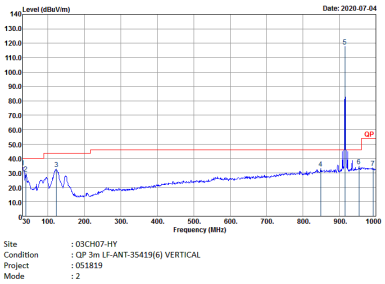
902.75MHz

UHF RFID_Tx (1GHz ~ 10GHz @ 3m)

ANT 1	902.75MHz UHF RFID (1GHz ~ 10GHz @ 3m)	
Port 1	UHF RFID 902.75 MHz	
	Horizontal	Vertical
Peak Avg.		

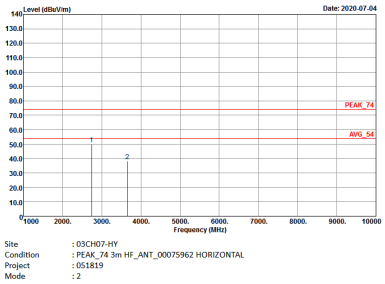
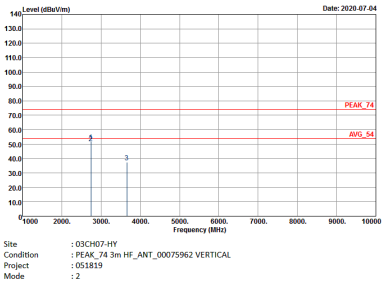
914.75MHz

UHF RFID_Tx (30MHz ~ 1GHz @ 3m)

ANT 1	914.75MHz UHF RFID (30MHz ~ 1GHz @ 3m)	
Port 1	UHF RFID_Tx 914.75 MHz	
	Horizontal	Vertical
QP / Peak		

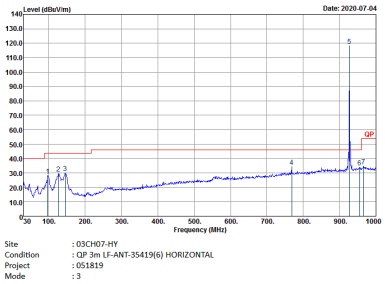
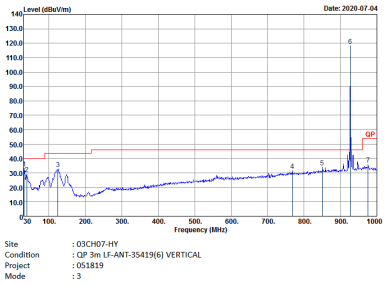
914.75MHz

UHF RFID_Tx (1GHz ~ 10GHz @ 3m)

ANT 1	914.75MHz UHF RFID (1GHz ~ 10GHz @ 3m)	
Port 1	UHF RFID 914.75 MHz	
	Horizontal	Vertical
Peak Avg.		

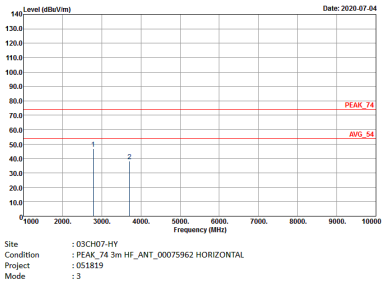
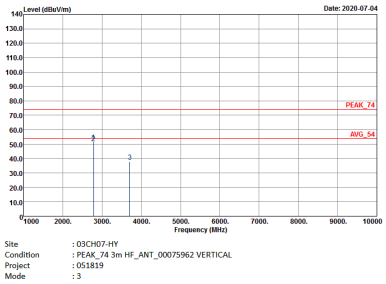
927.25MHz

UHF RFID_Tx (30MHz ~ 1GHz @ 3m)

ANT 1	927.25MHz UHF RFID (30MHz ~ 1GHz @ 3m)	
Port 1	UHF RFID 927.25 MHz	
	Horizontal	Vertical
QP / Peak		

927.25MHz

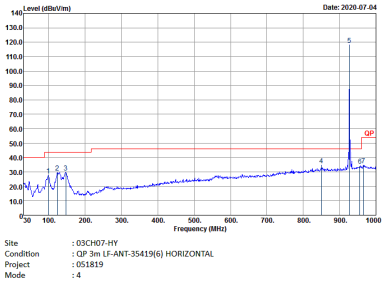
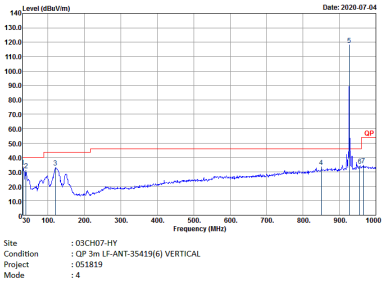
UHF RFID_Tx (1GHz ~ 10GHz @ 3m)

ANT 1	927.25MHz UHF RFID (1GHz ~ 10GHz @ 3m)	
Port 1	UHF RFID 927.25 MHz	
	Horizontal	Vertical
Peak Avg.		

<Antenna 1 (DKRE Port 2) + DKRE for Sample 1>

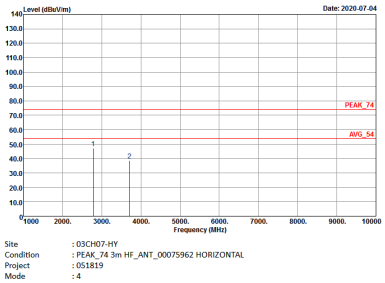
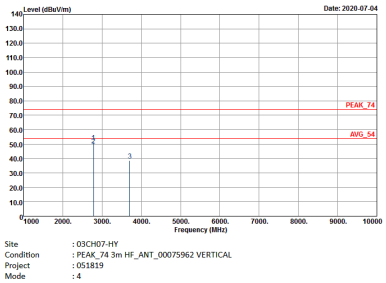
927.25MHz

UHF RFID_Tx (30MHz ~ 1GHz @ 3m)

ANT 1	927.25MHz UHF RFID (30MHz ~ 1GHz @ 3m)	
Port 2	UHF RFID 927.25 MHz	
	Horizontal	Vertical
QP / Peak		

927.25MHz

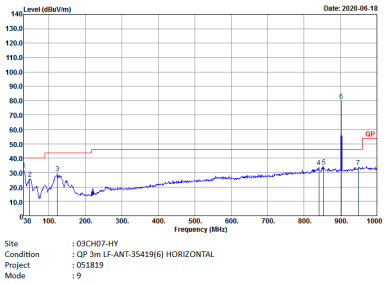
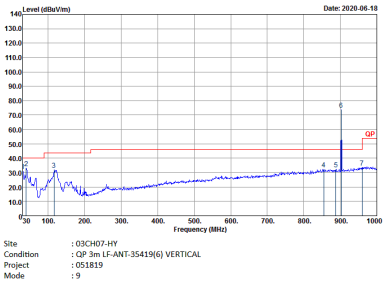
UHF RFID_Tx (1GHz ~ 10GHz @ 3m)

ANT 1	927.25MHz UHF RFID (1GHz ~ 10GHz @ 3m)	
Port 2	UHF RFID 927.25 MHz	
	Horizontal	Vertical
Peak Avg.		

<Antenna 2 (DKRE Port 1) + DKRE for Sample 1>

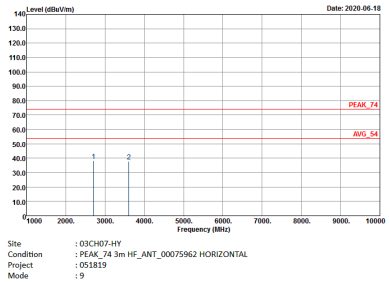
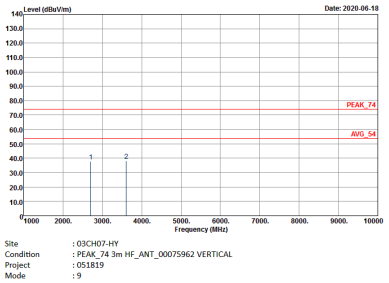
902.75MHz

UHF RFID_Tx (30MHz ~ 1GHz @ 3m)

ANT 2	902.75MHz UHF RFID (30MHz ~ 1GHz @ 3m)	
Port 1	UHF RFID 902.75 MHz	
	Horizontal	Vertical
QP / Peak		

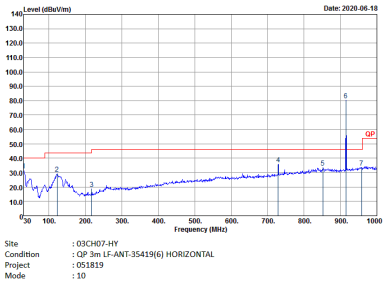
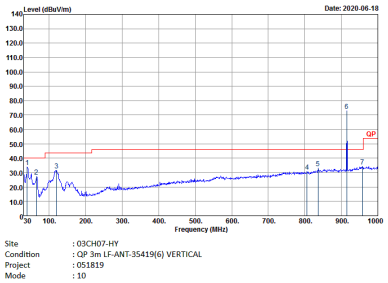
902.75MHz

UHF RFID_Tx (1GHz ~ 10GHz @ 3m)

ANT 2	902.75MHz UHF RFID (1GHz ~ 10GHz @ 3m)	
Port 1	UHF RFID 902.75 MHz	
	Horizontal	Vertical
Peak Avg.		

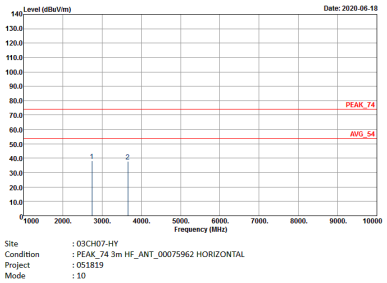
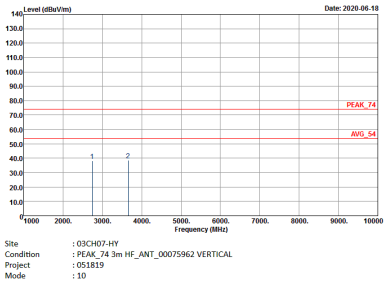
914.75MHz

UHF RFID_Tx (30MHz ~ 1GHz @ 3m)

ANT 2	914.75MHz UHF RFID (30MHz ~ 1GHz @ 3m)	
Port 1	UHF RFID_Tx 914.75 MHz	
	Horizontal	Vertical
QP / Peak		

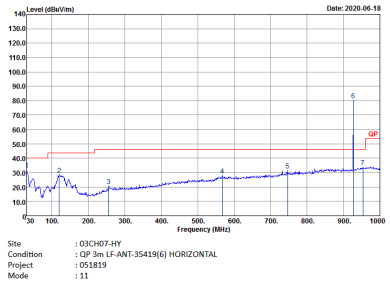
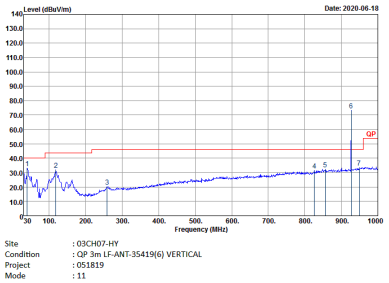
914.75MHz

UHF RFID_Tx (1GHz ~ 10GHz @ 3m)

ANT 2	914.75MHz UHF RFID (1GHz ~ 10GHz @ 3m)	
Port 1	UHF RFID 914.75MHz	
	Horizontal	Vertical
Peak Avg.		

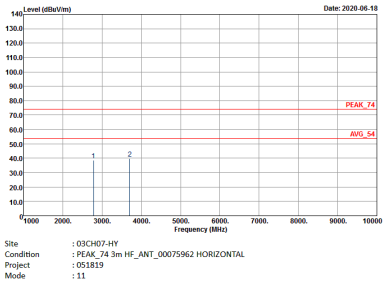
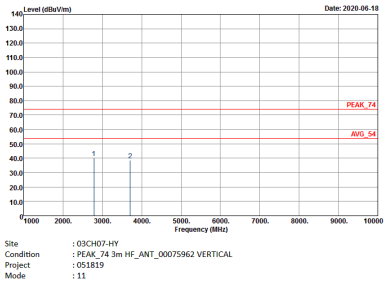
927.25MHz

UHF RFID_Tx (30MHz ~ 1GHz @ 3m)

ANT 2	927.25MHz UHF RFID (30MHz ~ 1GHz @ 3m)	
Port 1	UHF RFID 927.25 MHz	
	Horizontal	Vertical
QP / Peak		

927.25MHz

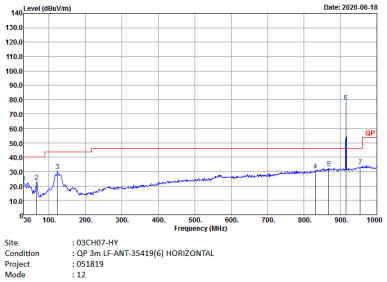
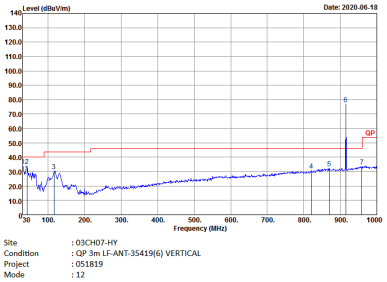
UHF RFID_Tx (1GHz ~ 10GHz @ 3m)

ANT 2	927.25MHz UHF RFID (1GHz ~ 10GHz @ 3m)	
Port 1	UHF RFID 927.25 MHz	
	Horizontal	Vertical
Peak Avg.		

<Antenna 2 (DKRE Port 2) + DKRE for Sample 1>

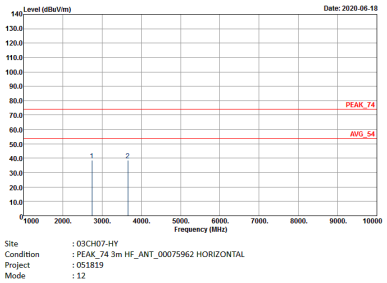
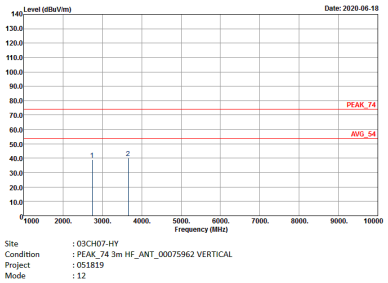
914.75MHz

UHF RFID_Tx (30MHz ~ 1GHz @ 3m)

ANT 2	914.75MHz UHF RFID (30MHz ~ 1GHz @ 3m)	
Port 2	UHF RFID 914.75 MHz	
	Horizontal	Vertical
QP / Peak		

914.75MHz

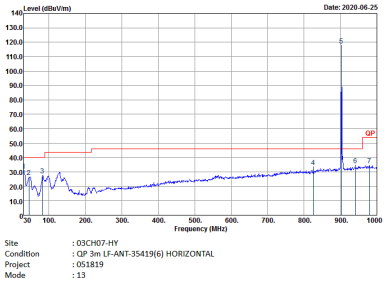
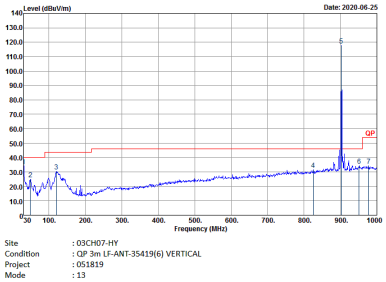
UHF RFID_Tx (1GHz ~ 10GHz @ 3m)

ANT 2	914.75MHz UHF RFID (1GHz ~ 10GHz @ 3m)	
Port 2	UHF RFID 914.75 MHz	
	Horizontal	Vertical
Peak Avg.		

<Antenna 1 + DKRE + Carrier board for Sample 2>

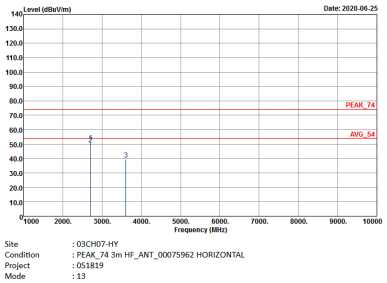
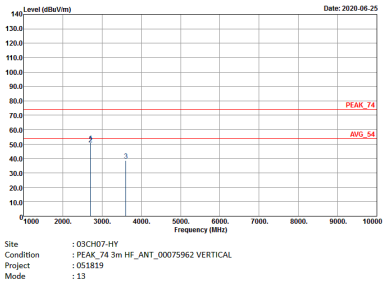
902.75MHz

UHF RFID_Tx (30MHz ~ 1GHz @ 3m)

ANT 1	902.75MHz UHF RFID (30MHz ~ 1GHz @ 3m)	
Port 2	UHF RFID 902.75 MHz	
	Horizontal	Vertical
QP / Peak		

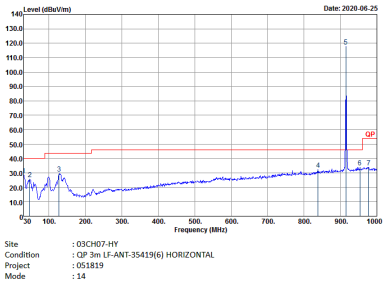
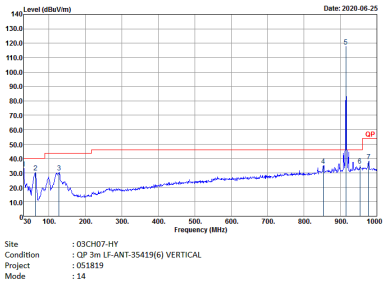
902.75MHz

UHF RFID_Tx (1GHz ~ 10GHz @ 3m)

ANT 1	902.75MHz UHF RFID (1GHz ~ 10GHz @ 3m)	
Port 2	UHF RFID 902.75 MHz	
	Horizontal	Vertical
Peak Avg.		

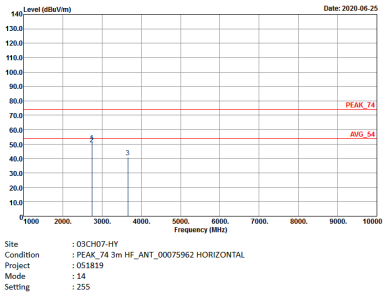
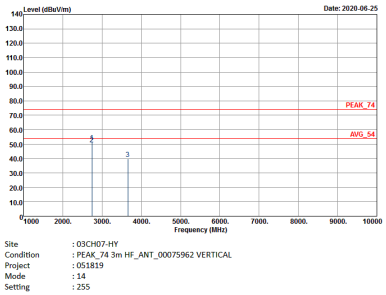
914.75MHz

UHF RFID_Tx (30MHz ~ 1GHz @ 3m)

ANT 1	914.75MHz UHF RFID (30MHz ~ 1GHz @ 3m)	
Port 2	UHF RFID_Tx 914.75 MHz	
	Horizontal	Vertical
QP / Peak		

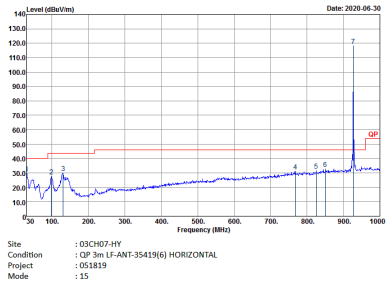
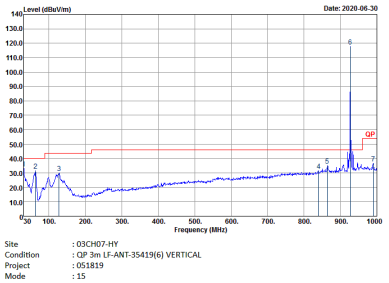
914.75MHz

UHF RFID_Tx (1GHz ~ 10GHz @ 3m)

ANT 1	914.75MHz UHF RFID (1GHz ~ 10GHz @ 3m)	
Port 2	UHF RFID 914.75 MHz	
	Horizontal	Vertical
Peak Avg.		

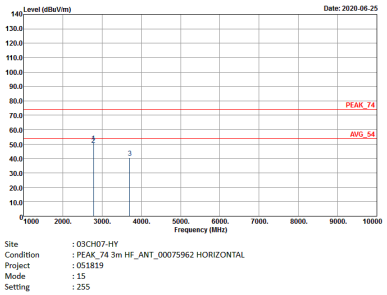
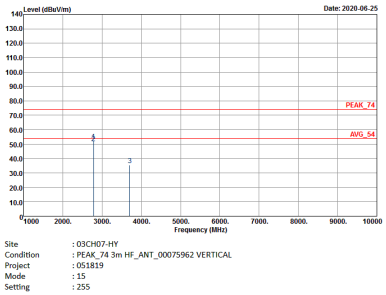
927.25MHz

UHF RFID_Tx (30MHz ~ 1GHz @ 3m)

ANT 1	927.25MHz UHF RFID (30MHz ~ 1GHz @ 3m)	
Port 2	UHF RFID 927.25 MHz	
	Horizontal	Vertical
QP / Peak		

927.25MHz

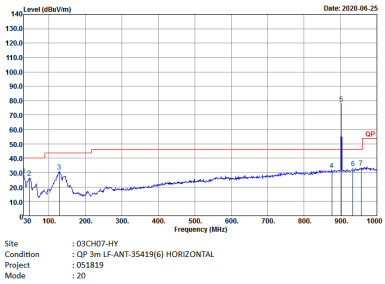
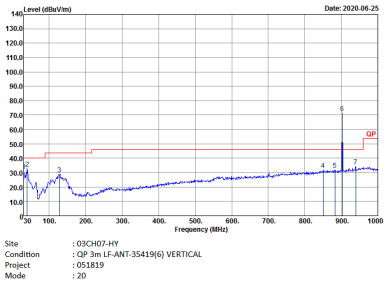
UHF RFID_Tx (1GHz ~ 10GHz @ 3m)

ANT 1	927.25MHz UHF RFID (1GHz ~ 10GHz @ 3m)	
Port 2	UHF RFID 927.25 MHz	
	Horizontal	Vertical
Peak Avg.		

<Antenna 2 + DKRE + Carrier board for Sample 2>

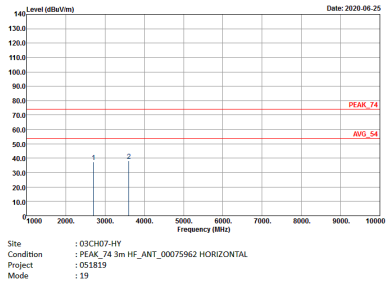
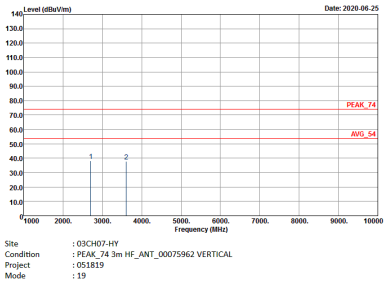
902.75MHz

UHF RFID_Tx (30MHz ~ 1GHz @ 3m)

ANT 2	902.75MHz UHF RFID (30MHz ~ 1GHz @ 3m)	
Port 2	UHF RFID 902.75 MHz	
	Horizontal	Vertical
QP / Peak		

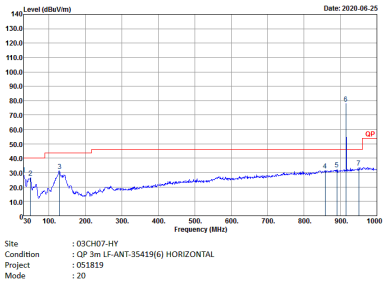
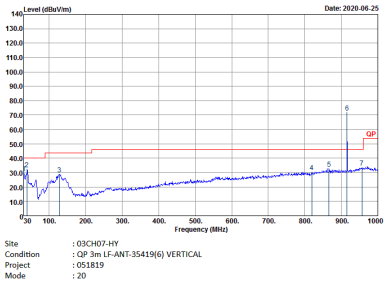
902.75MHz

UHF RFID_Tx (1GHz ~ 10GHz @ 3m)

ANT 2	902.75MHz UHF RFID (1GHz ~ 10GHz @ 3m)	
Port 2	UHF RFID 902.75 MHz	
	Horizontal	Vertical
Peak Avg.		

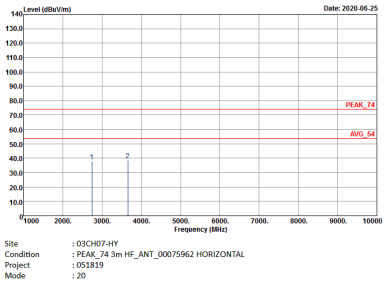
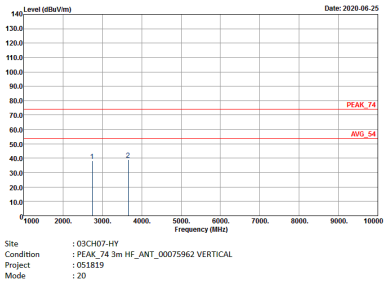
914.75MHz

UHF RFID_Tx (30MHz ~ 1GHz @ 3m)

ANT 3	914.75MHz UHF RFID (30MHz ~ 1GHz @ 3m)	
Port 2	UHF RFID_Tx 914.75 MHz	
	Horizontal	Vertical
QP / Peak		

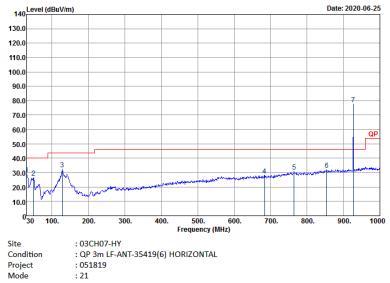
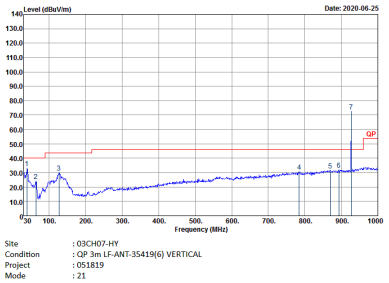
914.75MHz

UHF RFID_Tx (1GHz ~ 10GHz @ 3m)

ANT 2	914.75MHz UHF RFID (1GHz ~ 10GHz @ 3m)	
Port 2	UHF RFID 914.75 MHz	
	Horizontal	Vertical
Peak Avg.		

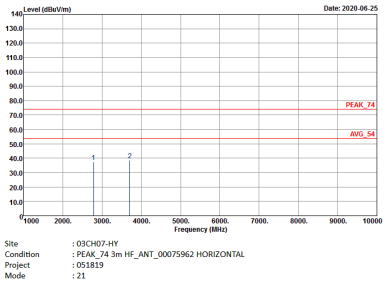
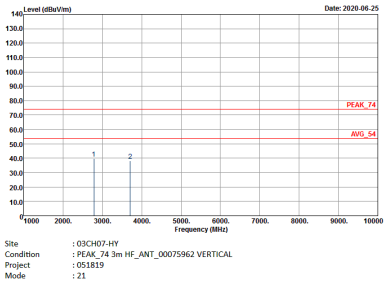
927.25MHz

UHF RFID_Tx (30MHz ~ 1GHz @ 3m)

ANT 2	927.25MHz UHF RFID (30MHz ~ 1GHz @ 3m)	
Port 2	UHF RFID 927.25 MHz	
	Horizontal	Vertical
QP / Peak		

927.25MHz

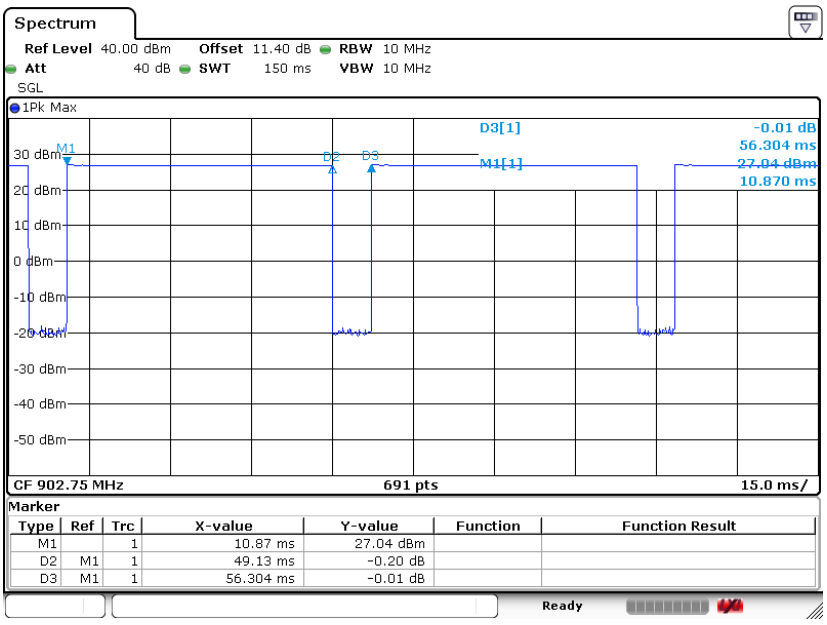
UHF RFID_Tx (1GHz ~ 10GHz @ 3m)

ANT 2	927.25MHz UHF RFID (1GHz ~ 10GHz @ 3m)	
Port 2	UHF RFID 927.25 MHz	
	Horizontal	Vertical
Peak Avg.		

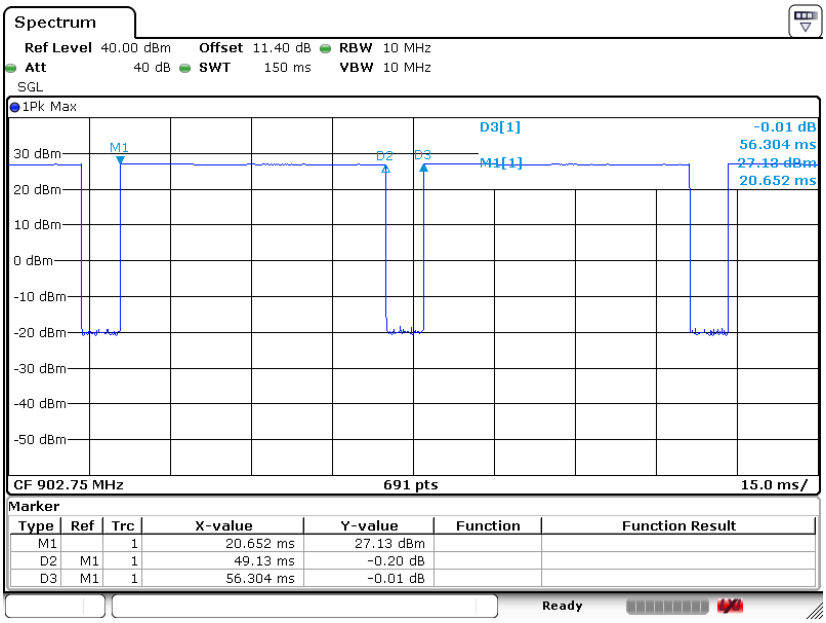
Appendix D. Duty Cycle Plots

Band	Duty Cycle (%)	T(us)	1/T(kHz)	VBW Setting	Duty Factor (dB)
UHF RFID for Sample 1 (DKRE Port 1)	87.26	4913.00	0.20	1 kHz	0.59
UHF RFID for Sample 1 (DKRE Port 2)	87.26	4913.00	0.20	1 kHz	0.59
UHF RFID for Sample 2	87.26	4913.00	0.20	1 kHz	0.59

Sample 1 (DKRE Port 1)

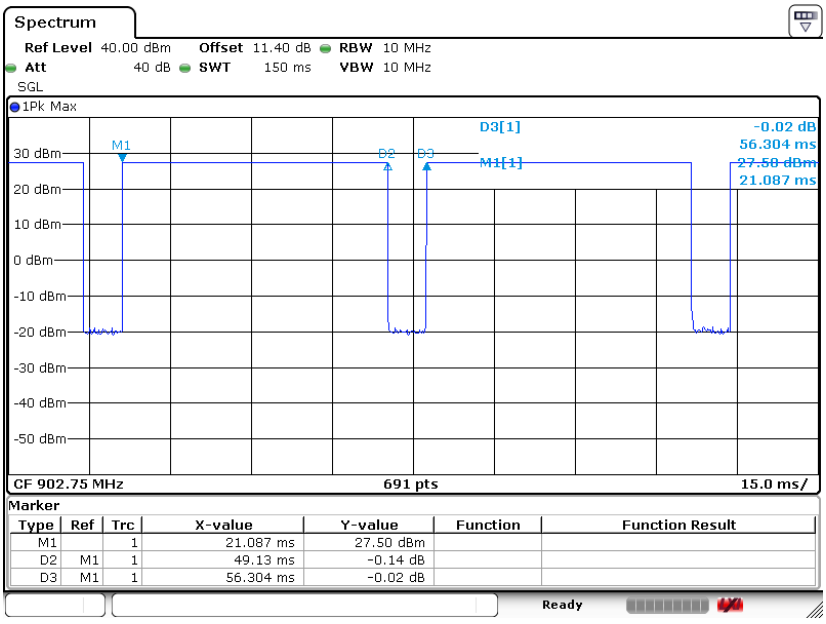


Sample 1 (DKRE Port 2)



Date: 2.JUN.2020 15:22:02

Sample 2



Date: 2.JUN.2020 15:45:07