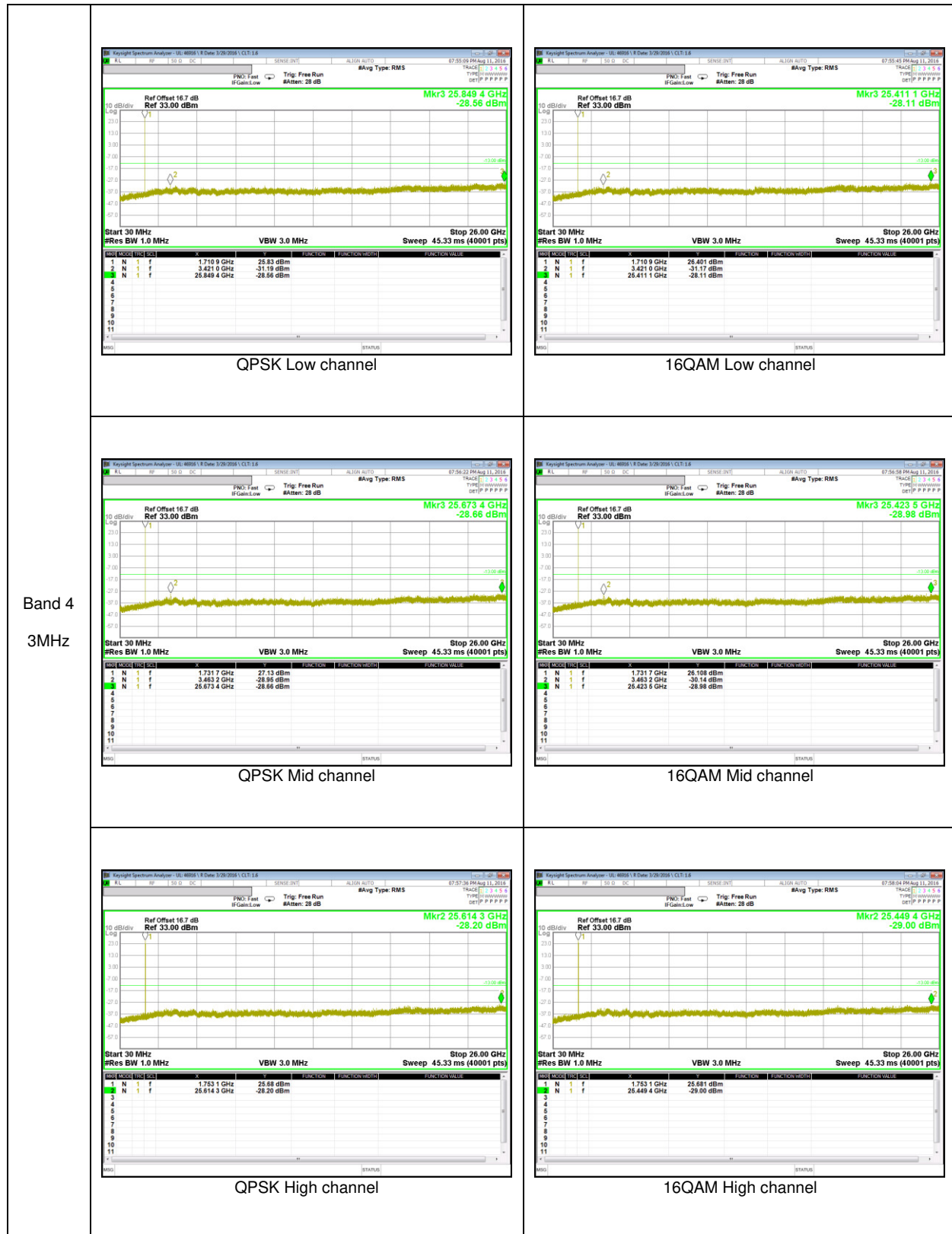
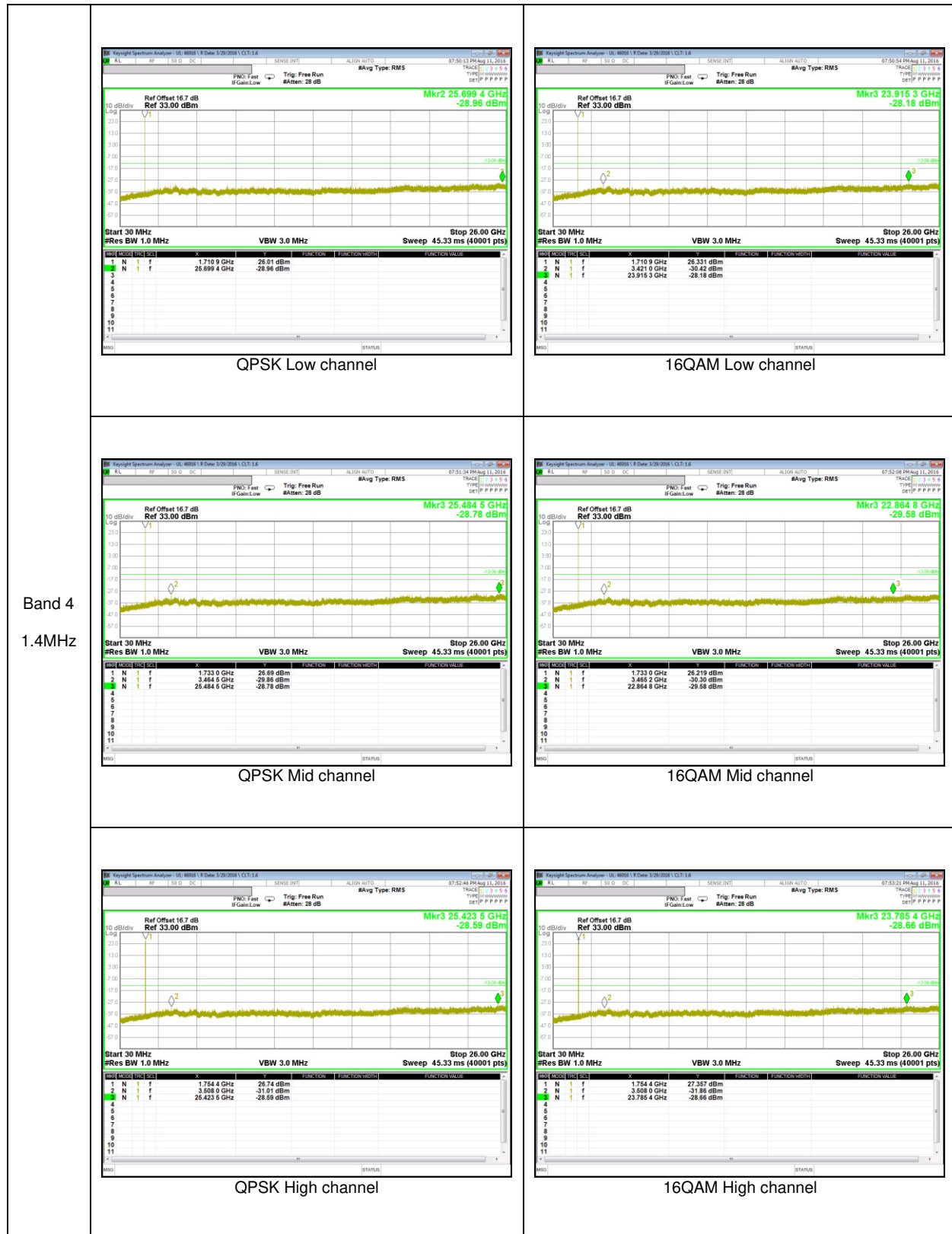
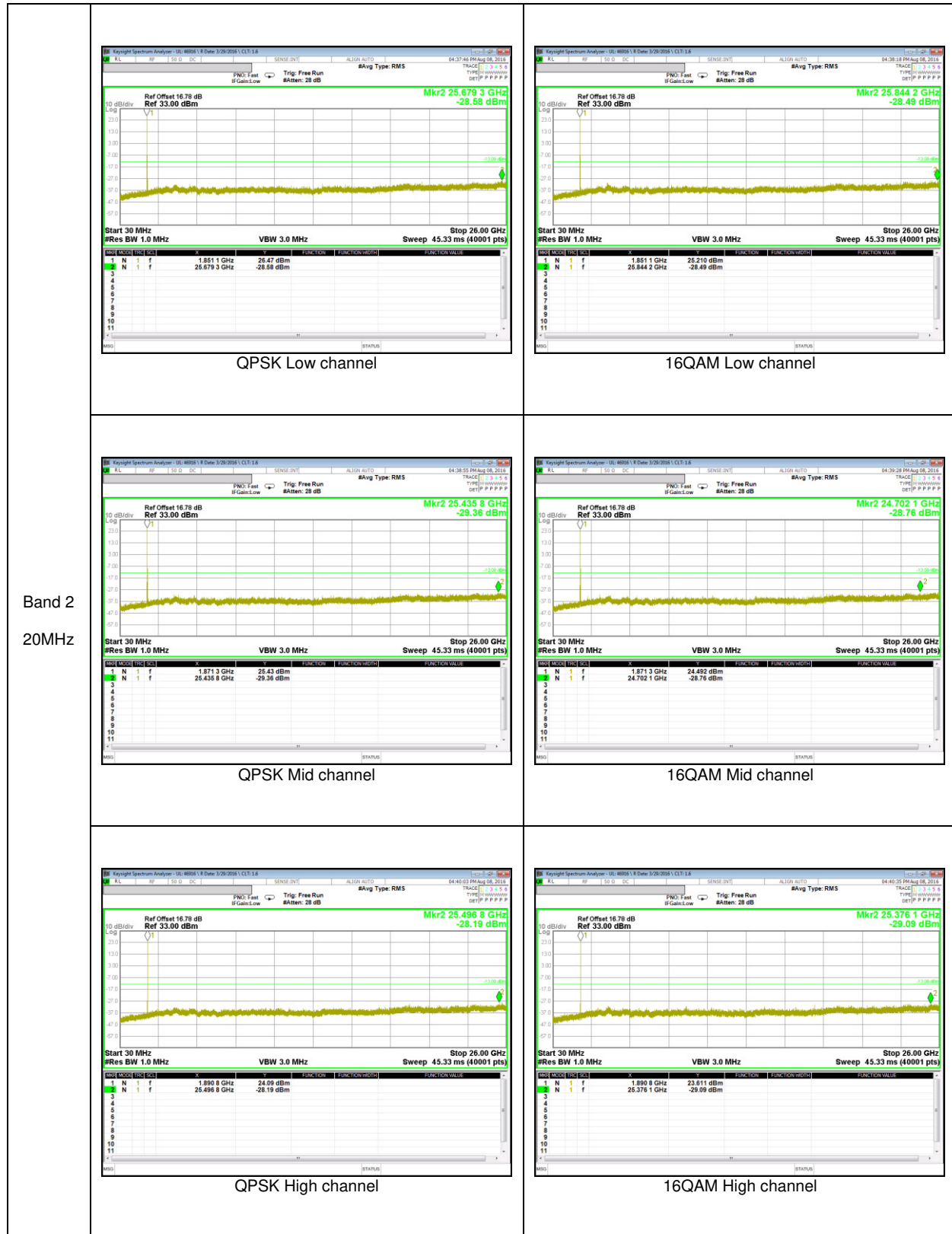
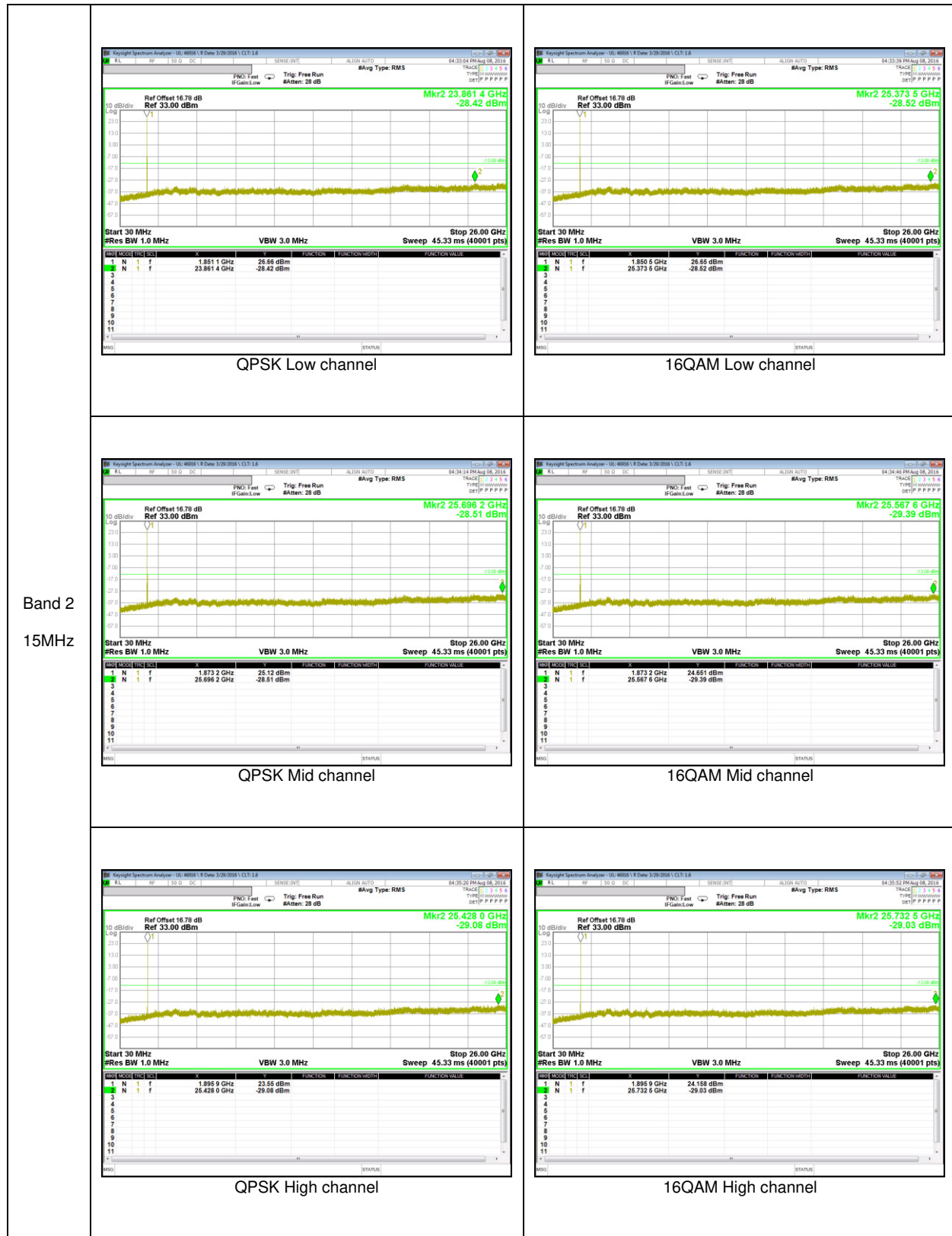


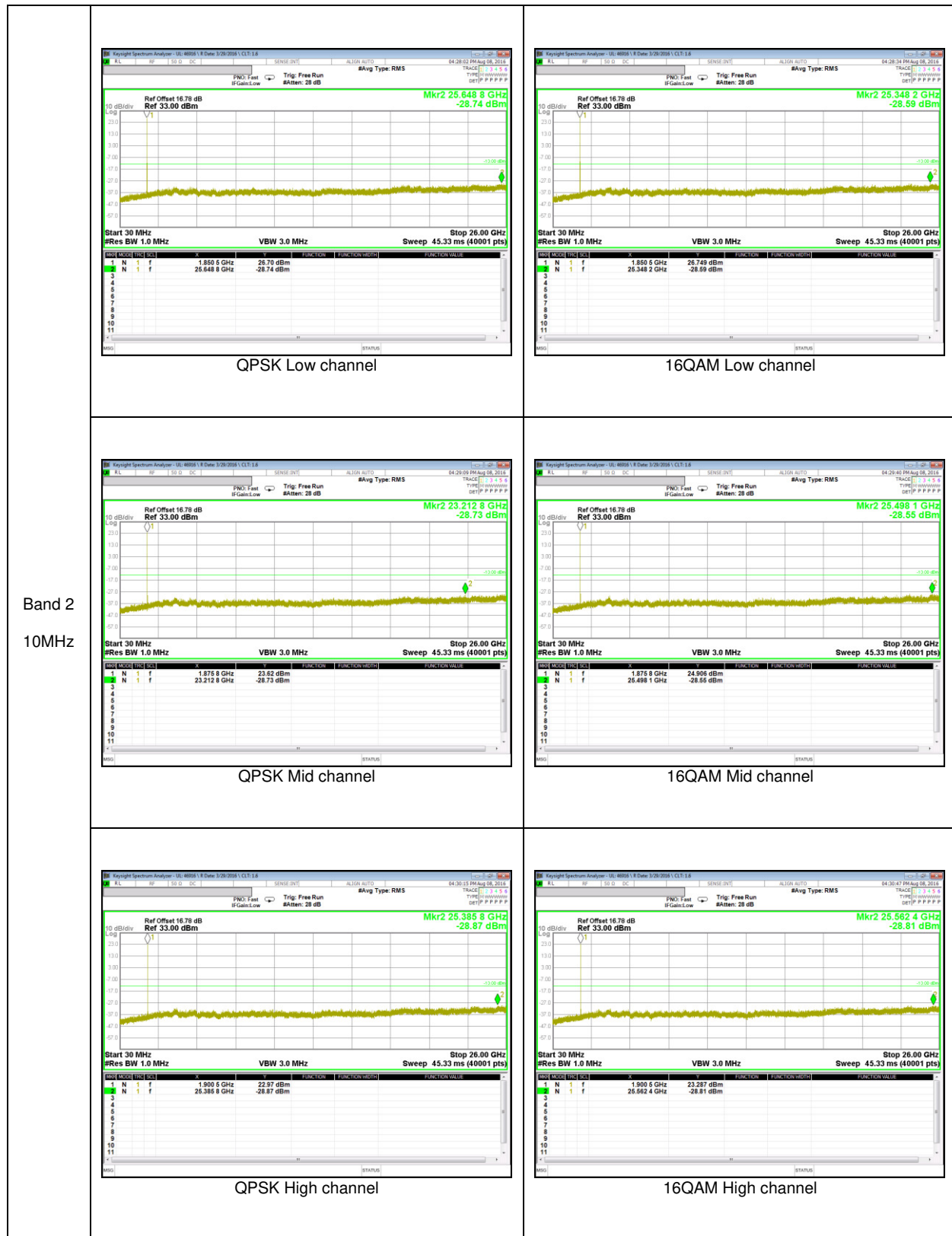


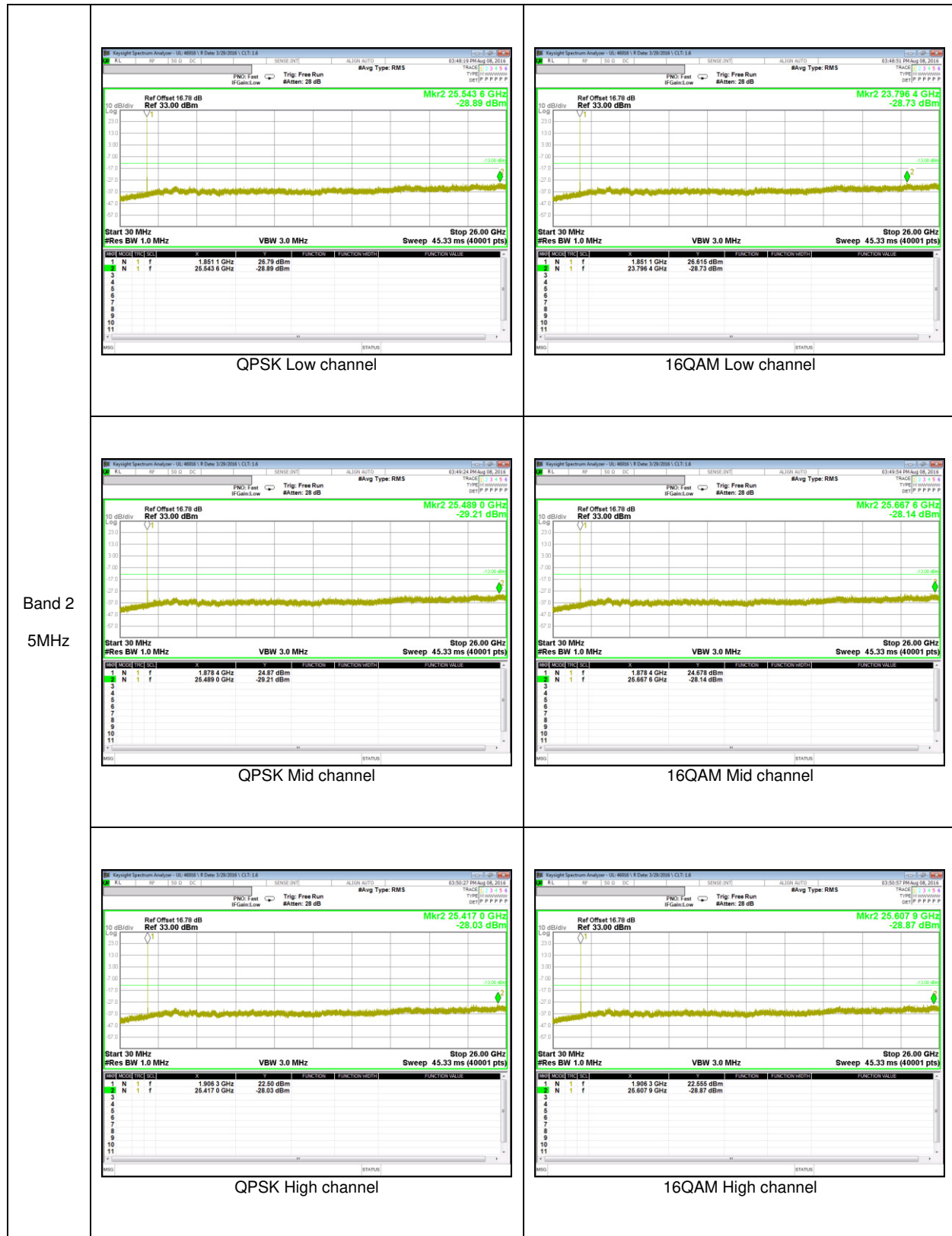


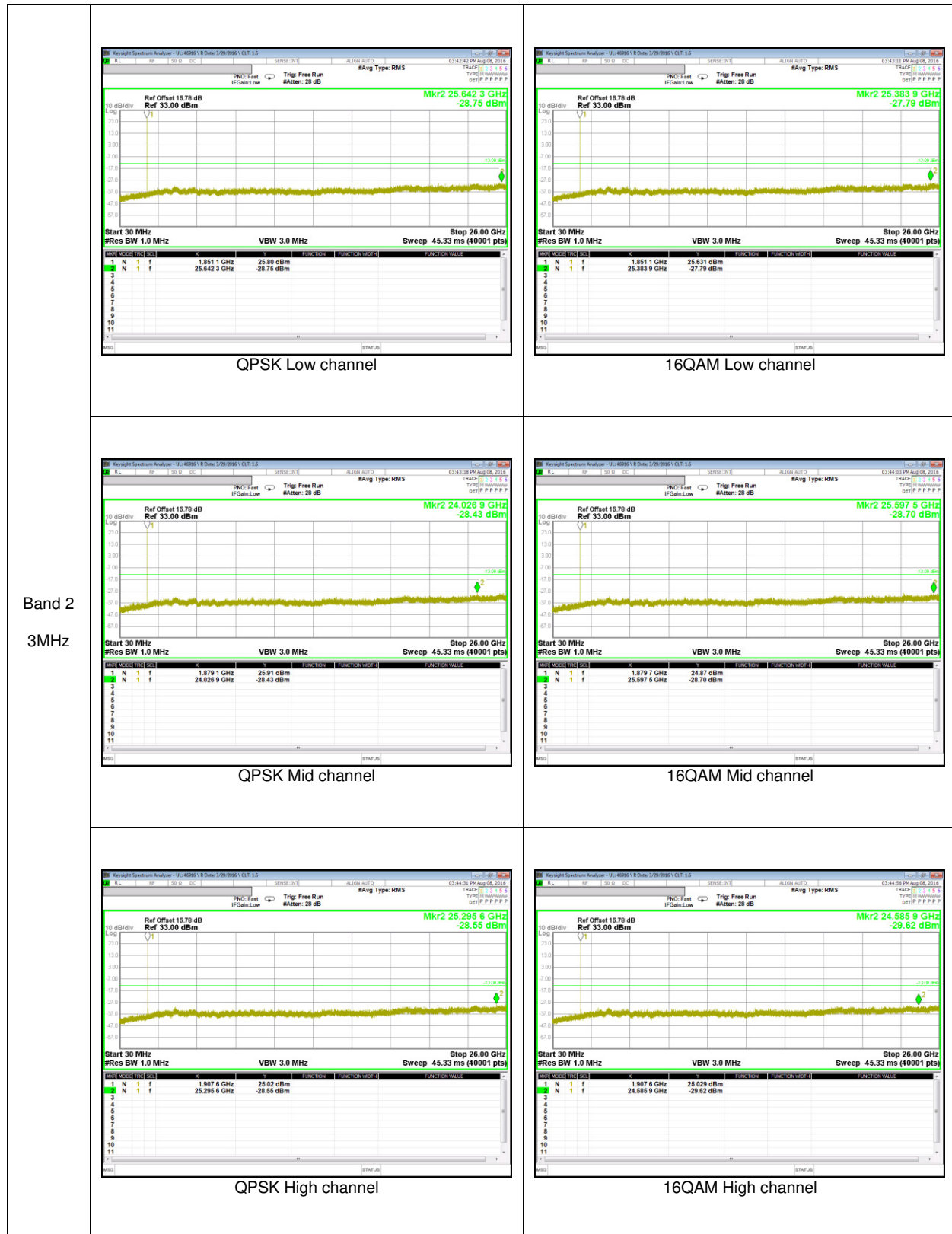
LTE Band 2

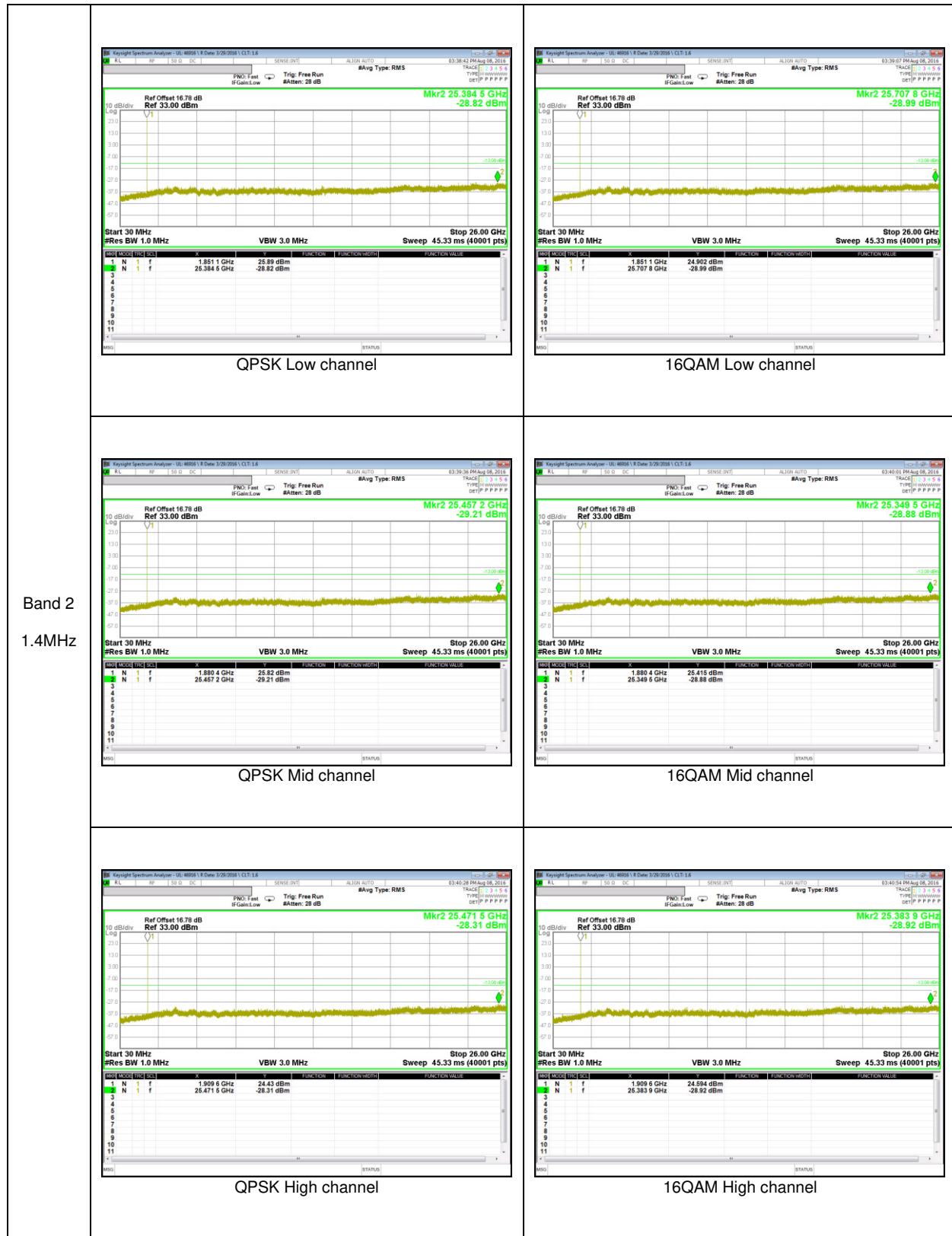












10.4. FREQUENCY STABILITY

RULE PART(S)

FCC: §2.1055, §22.355, §24.235 and §27.54

LIMITS

§22.355 - The carrier frequency shall not depart from the reference frequency in excess of ± 2.5 ppm for mobile stations.

§24.235 - The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

§27.54 - The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation

TEST PROCEDURE

Per KDB 971168 D01 Power Meas License Digital Systems v02r02

RESULTS

See the following pages.

10.4.1. FREQUENCY STABILITY RESULTS

LTE Band 5, Channel 20524, Frequency 836.5 MHz

Reference Frequency: LTE Band 5 Mid Channel 836.5 MHz @ 20°C				
Limit: +- 2.5 ppm = 2091.250 Hz				
Power Supply [Vdc]	Environment Temperature [°C]	Frequency Deviation Measured with Time Elapse		
		[MHz]	Delta [ppm]	Limit [ppm]
3.80	50	836.49999516	-0.001	2.5
3.80	40	836.49999631	-0.003	2.5
3.80	30	836.49999617	-0.002	2.5
3.80	20	836.49999413	0	2.5
3.80	10	836.49999602	-0.002	2.5
3.80	0	836.49999561	-0.002	2.5
3.80	-10	836.49999477	-0.001	2.5
3.80	-20	836.49999512	-0.001	2.5
3.80	-30	836.49999466	-0.001	2.5

Reference Frequency: LTE Band 5 Mid Channel 836.5 MHz @ 20°C				
Limit: +- 2.5 ppm = 2091.250 Hz				
Power Supply [Vdc]	Environment Temperature [°C]	Frequency Deviation Measured with Time Elapse		
		[MHz]	Delta [ppm]	Limit [ppm]
3.80	20	836.49999413	0	2.5
4.20	20	836.49999574	-0.002	2.5
3.40	20	836.49999481	-0.001	2.5

WCDMA Band 5, Channel 4183, Frequency 836.6 MHz

Reference Frequency: WCDMA Band 5 Mid Channel 836.6 MHz @ 20°C				
Limit: +- 2.5 ppm = 2091.500 Hz				
Power Supply [Vdc]	Environment Temperature [°C]	Frequency Deviation Measured with Time Elapse		
		[MHz]	Delta [ppm]	Limit [ppm]
3.80	50	836.60000414	0.001	2.5
3.80	40	836.60000346	0.002	2.5
3.80	30	836.60000392	0.001	2.5
3.80	20	836.60000494	0	2.5
3.80	10	836.60000526	0.000	2.5
3.80	0	836.60000487	0.000	2.5
3.80	-10	836.60000468	0.000	2.5
3.80	-20	836.60000688	-0.002	2.5
3.80	-30	836.60000456	0.000	2.5

Reference Frequency: WCDMA Band 5 Mid Channel 836.6 MHz @ 20°C				
Limit: +- 2.5 ppm = 2091.500 Hz				
Power Supply [Vdc]	Environment Temperature [°C]	Frequency Deviation Measured with Time Elapse		
		[MHz]	Delta [ppm]	Limit [ppm]
3.80	20	836.60000494	0	2.5
4.20	20	836.60000464	0.000	2.5
3.40	20	836.60000381	0.001	2.5

GSM 850, Channel 190, Frequency 836.6 MHz

Reference Frequency : GSM850 Mid Channel 836.6 MHz @ 20°C				
Limit: +- 2.5 ppm = 2091.500 Hz				
Power Supply [Vdc]	Environment Temperature [°C]	Frequency Deviation Measured with Time Elapse		
		[MHz]	Delta [ppm]	Limit [ppm]
3.80	50	836.60001685	0.011	2.5
3.80	40	836.60001556	0.012	2.5
3.80	30	836.60001640	0.011	2.5
3.80	20	836.60002596	0	2.5
3.80	10	836.60002361	0.003	2.5
3.80	0	836.60002260	0.004	2.5
3.80	-10	836.60002412	0.002	2.5
3.80	-20	836.60002202	0.005	2.5
3.80	-30	836.60002315	0.003	2.5

Reference Frequency : GSM850 Mid Channel 836.6 MHz @ 20°C				
Limit: +- 2.5 ppm = 2091.500 Hz				
Power Supply [Vdc]	Environment Temperature [°C]	Frequency Deviation Measured with Time Elapse		
		[MHz]	Delta [ppm]	Limit [ppm]
3.80	20	836.60002596	0	2.5
4.20	20	836.60002512	0.001	2.5
3.80	20	836.60002496	0.001	2.5

LTE Band 4, Channel 20174, Frequency 1732.5 MHz

Reference Frequency: LTE Band 4 Mid Channel 1732.5 MHz @ 20°C				
Limit: +- 2.5 ppm = 4331.250 Hz				
Power Supply [Vdc]	Environment Temperature [°C]	Frequency Deviation Measured with Time Elapse		
		[MHz]	Delta [ppm]	Limit [ppm]
3.80	50	1732.50000988	0.001	2.5
3.80	40	1732.50000953	0.001	2.5
3.80	30	1732.50000837	0.002	2.5
3.80	20	1732.50001100	0	2.5
3.80	10	1732.50001070	0.000	2.5
3.80	0	1732.50000866	0.001	2.5
3.80	-10	1732.50000824	0.002	2.5
3.80	-20	1732.50000945	0.001	2.5
3.80	-30	1732.50000710	0.002	2.5

Reference Frequency: LTE Band 4 Mid Channel 1732.5 MHz @ 20°C				
Limit: +- 2.5 ppm = 4331.250 Hz				
Power Supply [Vdc]	Environment Temperature [°C]	Frequency Deviation Measured with Time Elapse		
		[MHz]	Delta [ppm]	Limit [ppm]
3.80	20	1732.50001100	0	2.5
4.20	20	1732.50001040	0.000	2.5
3.40	20	1732.50001123	0.000	2.5

WCDMA Band 4, Channel 1413, Frequency 1732.6 MHz

Reference Frequency: WCDMA Band 4 Mid Channel 1732.6 MHz @ 20°C				
Limit: +- 2.5 ppm = 4331.500 Hz				
Power Supply [Vdc]	Environment Temperature [°C]	Frequency Deviation Measured with Time Elapse		
		[MHz]	Delta [ppm]	Limit [ppm]
3.80	50	1732.60000718	0.001	2.5
3.80	40	1732.60000850	0.000	2.5
3.80	30	1732.60000868	0.000	2.5
3.80	20	1732.60000877	0	2.5
3.80	10	1732.60000940	0.000	2.5
3.80	0	1732.60001076	-0.001	2.5
3.80	-10	1732.60001333	-0.003	2.5
3.80	-20	1732.60001491	-0.004	2.5
3.80	-30	1732.60001681	-0.005	2.5

Reference Frequency: WCDMA Band 4 Mid Channel 1732.6 MHz @ 20°C				
Limit: +- 2.5 ppm = 4331.500 Hz				
Power Supply [Vdc]	Environment Temperature [°C]	Frequency Deviation Measured with Time Elapse		
		[MHz]	Delta [ppm]	Limit [ppm]
3.80	20	1732.60000877	0	2.5
4.20	20	1732.60000689	0.001	2.5
3.40	20	1732.60000748	0.001	2.5

LTE Band 2, Channel 18900, Frequency 1880.0 MHz

Reference Frequency: LTE Band 2 Mid Channel 1880 MHz @ 20°C				
Limit: +- 2.5 ppm = 4700.000 Hz				
Power Supply [Vdc]	Environment Temperature [°C]	Frequency Deviation Measured with Time Elapse		
		[MHz]	Delta [ppm]	Limit [ppm]
3.80	50	1879.99998765	0.000	2.5
3.80	40	1879.99998993	-0.001	2.5
3.80	30	1879.99998863	-0.001	2.5
3.80	20	1879.99998728	0	2.5
3.80	10	1879.99998732	0.000	2.5
3.80	0	1879.99998948	-0.001	2.5
3.80	-10	1879.99999019	-0.002	2.5
3.80	-20	1879.99999030	-0.002	2.5
3.80	-30	1879.99998798	0.000	2.5

Reference Frequency: LTE Band 2 Mid Channel 1880 MHz @ 20°C				
Limit: +- 2.5 ppm = 4700.000 Hz				
Power Supply [Vdc]	Environment Temperature [°C]	Frequency Deviation Measured with Time Elapse		
		[MHz]	Delta [ppm]	Limit [ppm]
3.80	20	1879.99998728	0	2.5
4.20	20	1879.99998858	-0.001	2.5
3.40	20	1879.99998880	-0.001	2.5

WCDMA Band 2, Channel 9400, Frequency 1880.0 MHz

Reference Frequency: WCDMA Band 2 Mid Channel 1880.0 MHz @ 20°C				
Limit: +- 2.5 ppm = 4700.000 Hz				
Power Supply [Vdc]	Environment Temperature [°C]	Frequency Deviation Measured with Time Elapse		
		[MHz]	Delta [ppm]	Limit [ppm]
3.80	50	1880.00001135	-0.001	2.5
3.80	40	1880.00001171	-0.001	2.5
3.80	30	1880.00001129	-0.001	2.5
3.80	20	1880.00001019	0	2.5
3.80	10	1880.00001045	0.000	2.5
3.80	0	1880.00001011	0.000	2.5
3.80	-10	1880.00000986	0.000	2.5
3.80	-20	1880.00000846	0.001	2.5
3.80	-30	1880.00000717	0.002	2.5

Reference Frequency: WCDMA Band 2 Mid Channel 1880.0 MHz @ 20°C				
Limit: +- 2.5 ppm = 4700.000 Hz				
Power Supply [Vdc]	Environment Temperature [°C]	Frequency Deviation Measured with Time Elapse		
		[MHz]	Delta [ppm]	Limit [ppm]
3.80	20	1880.00001019	0	2.5
4.20	20	1880.00000787	0.001	2.5
3.40	20	1880.00000916	0.001	2.5

GSM 1900, Channel 661, Frequency 1880.0 MHz

Reference Frequency: GSM1900 Mid Channel 1880.0 MHz @ 20°C				
Limit: +- 2.5 ppm = 4700.000 Hz				
Power Supply [Vdc]	Environment Temperature [°C]	Frequency Deviation Measured with Time Elapse		
		[MHz]	Delta [ppm]	Limit [ppm]
3.80	50	1880.00001198	0.002	2.5
3.80	40	1880.00001262	0.002	2.5
3.80	30	1880.00001452	0.001	2.5
3.80	20	1880.00001566	0	2.5
3.80	10	1880.00001635	0.000	2.5
3.80	0	1880.00001897	-0.002	2.5
3.80	-10	1880.00001866	-0.002	2.5
3.80	-20	1880.00002285	-0.004	2.5
3.80	-30	1880.00002444	-0.005	2.5

Reference Frequency: GSM1900 Mid Channel 1880.0 MHz @ 20°C				
Limit: +- 2.5 ppm = 4700.000 Hz				
Power Supply [Vdc]	Environment Temperature [°C]	Frequency Deviation Measured with Time Elapse		
		[MHz]	Delta [ppm]	Limit [ppm]
3.80	20	1880.00001566	0	2.5
4.20	20	1880.00001508	0.000	2.5
3.80	20	1880.00001453	0.001	2.5

11. RADIATED TEST RESULTS

11.1. FIELD STRENGTH OF SPURIOUS RADIATION

RULE PART(S)

FCC: §2.1053, §22.917, §24.238 and §27. 53

LIMIT

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log (P)$ dB.

TEST PROCEDURE

ANSI / TIA / EIA 603D Clause 2.2.12; ESU40 setting reference to 971168 D01 v02r02

For peak power measurement with a ESU40:

- a) Set the RBW = 100KHz for emission below 1GHz and 1MHz for emissions above 1GHz
- b) Set VBW $\geq 3 \times$ RBW;
- c) Set span ≥ 1.5 times the OBW;
- d) Sweep time = auto couple;
- e) Detector = peak;
- f) Ensure that the number of measurement points $\geq$ span/RBW;
- g) Trace mode = max hold;

RESULTS

11.1.1. SPURIOUS RADIATION PLOTS

GSM 850

UL Korea, Ltd Suwon Laboratory Above 1GHz High Frequency Substitution Measurement										
Company:		Wisol								
Project #:		16K23790								
Date:		09-07-16								
Test Engineer:		YH Lim								
Configuration:		EUT , X P position								
Mode:		GPRS 850 MHz								
Chamber		Pre-amplifier		Filter		Limit				
Chamber 2		AFS42		Filter 1		Part 22				
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes	
Low Ch, 824.2MHz										
1.6484	-4.8	V	3.0	39.1	1.0	-42.9	-13.0	-29.9		
2.4726	-8.4	V	3.0	39.5	1.0	-46.9	-13.0	-33.9		
3.2968	-22.5	V	3.0	40.1	1.0	-61.6	-13.0	-48.6		
1.6484	-6.4	H	3.0	39.1	1.0	-44.5	-13.0	-31.5		
2.4726	-15.1	H	3.0	39.5	1.0	-53.6	-13.0	-40.6		
3.2968	-23.4	H	3.0	40.1	1.0	-62.5	-13.0	-49.5		
Mid Ch, 836.6MHz										
1.6730	-12.6	V	3.0	39.1	1.0	-50.8	-13.0	-37.8		
2.5098	-17.5	V	3.0	39.5	1.0	-56.0	-13.0	-43.0		
3.3464	-20.3	V	3.0	40.1	1.0	-59.4	-13.0	-46.4		
1.6730	-8.8	H	3.0	39.1	1.0	-46.9	-13.0	-33.9		
2.5098	-18.4	H	3.0	39.5	1.0	-57.0	-13.0	-44.0		
3.3464	-22.2	H	3.0	40.1	1.0	-61.3	-13.0	-48.3		
High Ch, 848.8MHz										
1.6976	-16.6	V	3.0	39.1	1.0	-54.7	-13.0	-41.7		
2.5466	-11.5	V	3.0	39.6	1.0	-50.1	-13.0	-37.1		
3.3952	-17.7	V	3.0	40.2	1.0	-56.9	-13.0	-43.9		
1.6976	-14.7	H	3.0	39.1	1.0	-52.8	-13.0	-39.8		
2.5466	-18.9	H	3.0	39.6	1.0	-57.5	-13.0	-44.5		
3.3952	-20.0	H	3.0	40.2	1.0	-59.2	-13.0	-46.2		
Rev. 03.03.09										
Note: No other emissions were detected above the system noise floor.										

GSM
GSM850
GPRS

GSM 1900

UL Korea, Ltd Suwon Laboratory Above 1GHz High Frequency Substitution Measurement											
GSM GSM1900 GPR		Company: Wisol Project #: 16K23790 Date: 09-07-16 Test Engineer: YH Lim Configuration: EUT , X Position Mode: GPRS 1900									
		Chamber		Pre-amplifier		Filter		Limit			
		Chamber 2		AFS42		Filter 1		Part 24			
		f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
		Low Ch, 1850.2MHz									
		3.7004	-3.8	V	3.0	40.5	1.0	-43.2	-13.0	-30.2	
		5.5506	4.4	V	3.0	40.8	1.0	-35.4	-13.0	-22.4	
		7.4008	-2.2	V	3.0	40.8	1.0	-42.0	-13.0	-29.0	
		3.7004	-6.6	H	3.0	40.5	1.0	-46.1	-13.0	-33.1	
		5.5506	2.5	H	3.0	40.8	1.0	-37.3	-13.0	-24.3	
		7.4008	-7.6	H	3.0	40.8	1.0	-47.4	-13.0	-34.4	
		Mid Ch, 1880.0MHz									
		3.7600	-4.8	V	3.0	40.5	1.0	-44.4	-13.0	-31.4	
		5.6400	2.8	V	3.0	40.8	1.0	-37.0	-13.0	-24.0	
		7.5200	0.3	V	3.0	40.7	1.0	-39.4	-13.0	-26.4	
		3.7600	-10.0	H	3.0	40.5	1.0	-49.5	-13.0	-36.5	
		5.6400	1.8	H	3.0	40.8	1.0	-38.0	-13.0	-25.0	
		7.5200	-7.6	H	3.0	40.7	1.0	-47.3	-13.0	-34.3	
		High Ch, 1909.8 MHz									
		3.8196	0.4	V	3.0	40.6	1.0	-39.2	-13.0	-26.2	
		5.7294	4.5	V	3.0	40.8	1.0	-35.3	-13.0	-22.3	
		7.6392	1.8	V	3.0	40.7	1.0	-37.8	-13.0	-24.8	
		3.8196	-6.5	H	3.0	40.6	1.0	-46.1	-13.0	-33.1	
		5.7294	2.3	H	3.0	40.8	1.0	-37.5	-13.0	-24.5	
		7.6392	-3.2	H	3.0	40.7	1.0	-42.9	-13.0	-29.9	
		Rev. 03.03.09									
		Note: No other emissions were detected above the system noise floor.									

WCDMA B5

WCDMA Band 5 REL99		UL Korea, Ltd Suwon Laboratory Above 1GHz High Frequency Substitution Measurement Company: Wisol Project #: 16K23790 Date: 09-07-16 Test Engineer: YH Lim Configuration: EUT / X Position Mode: Tx, REL99,850MHz																																																																																																																																																																																																																																					
		Chamber Chamber 2 Pre-amplifier AFS42 Filter Filter 1 Limit Part 22																																																																																																																																																																																																																																					
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2.5390	-22.4	H	3.0	39.6	1.0	-60.9	-13.0	-47.9																																																																																																																																																																																																																															
3.3860	-20.4	H	3.0	40.2	1.0	-59.6	-13.0	-46.6																																																																																																																																																																																																																															
	Rev. 03.03.09 Note: No other emissions were detected above the system noise floor.																																																																																																																																																																																																																																						

WCDMA B4

WCDMA
Band 4
REL99

UL Korea, Ltd Suwon Laboratory Above 1GHz High Frequency Substitution Measurement									
Company:		Wisol							
Project #:		16K23790							
Date:		08-31-16							
Test Engineer:		JH Park							
Configuration:		EUT / X Position							
Mode:		Tx, REL99, 1700MHz							
Chamber		Pre-amplifier		Filter		Limit			
Chamber 2		AFS42		Filter 1		Part 24			
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1712.4MHz									
3.4248	-3.5	V	3.0	40.2	1.0	-42.7	-13.0	-29.7	
5.1372	-5.0	V	3.0	40.9	1.0	-44.9	-13.0	-31.9	
6.8496	1.2	V	3.0	41.0	1.0	-38.8	-13.0	-25.8	
3.4248	-3.3	H	3.0	40.2	1.0	-42.5	-13.0	-29.5	
5.1372	-8.0	H	3.0	40.9	1.0	-47.9	-13.0	-34.9	
6.8496	-3.5	H	3.0	41.0	1.0	-43.5	-13.0	-30.5	
Mid Ch, 1732.6MHz									
3.4652	-1.4	V	3.0	40.3	1.0	-40.7	-13.0	-27.7	
5.1978	-6.5	V	3.0	40.9	1.0	-46.4	-13.0	-33.4	
6.9304	1.3	V	3.0	41.0	1.0	-38.7	-13.0	-25.7	
3.4652	-3.8	H	3.0	40.3	1.0	-43.1	-13.0	-30.1	
5.1978	-9.5	H	3.0	40.9	1.0	-49.4	-13.0	-36.4	
6.9304	-4.0	H	3.0	41.0	1.0	-44.0	-13.0	-31.0	
High Ch, 1752.6MHz									
3.5052	-5.9	V	3.0	40.3	1.0	-45.2	-13.0	-32.2	
5.2578	-5.9	V	3.0	40.9	1.0	-45.8	-13.0	-32.8	
7.0104	-0.4	V	3.0	41.0	1.0	-40.4	-13.0	-27.4	
3.5052	-4.0	H	3.0	40.3	1.0	-43.2	-13.0	-30.2	
5.2578	-11.2	H	3.0	40.9	1.0	-51.1	-13.0	-38.1	
7.0104	-5.4	H	3.0	41.0	1.0	-45.4	-13.0	-32.4	
Rev. 03.03.09 Note: No other emissions were detected above the system noise floor.									

WCDMA
Band 4
HSDPA

UL Korea, Ltd Suwon Laboratory Above 1GHz High Frequency Substitution Measurement									
Company:		Wisol							
Project #:		16K23790							
Date:		08-31-16							
Test Engineer:		JH Park							
Configuration:		EUT / X Position							
Mode:		Tx, HSDPA, 1700MHz							
Chamber		Pre-amplifier		Filter		Limit			
Chamber 2		AFS42		Filter 1		Part 24			
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1712.4MHz									
3.4248	-2.3	V	3.0	40.2	1.0	-41.5	-13.0	-28.5	
5.1372	-6.4	V	3.0	40.9	1.0	-46.3	-13.0	-33.3	
6.8496	1.4	V	3.0	41.0	1.0	-38.6	-13.0	-25.6	
3.4248	-1.6	H	3.0	40.2	1.0	-40.8	-13.0	-27.8	
5.1372	-8.5	H	3.0	40.9	1.0	-48.4	-13.0	-35.4	
6.8496	-7.3	H	3.0	41.0	1.0	-47.3	-13.0	-34.3	
Mid Ch, 1732.6MHz									
3.4652	-4.4	V	3.0	40.3	1.0	-43.7	-13.0	-30.7	
5.1978	-8.2	V	3.0	40.9	1.0	-48.1	-13.0	-35.1	
6.9304	-1.3	V	3.0	41.0	1.0	-41.3	-13.0	-28.3	
3.4652	-2.6	H	3.0	40.3	1.0	-41.8	-13.0	-28.8	
5.1978	-10.4	H	3.0	40.9	1.0	-50.3	-13.0	-37.3	
6.9304	-6.4	H	3.0	41.0	1.0	-46.4	-13.0	-33.4	
High Ch, 1752.6MHz									
3.5052	1.3	V	3.0	40.3	1.0	-38.0	-13.0	-25.0	
5.2578	-8.2	V	3.0	40.9	1.0	-48.1	-13.0	-35.1	
7.0104	-2.8	V	3.0	41.0	1.0	-42.8	-13.0	-29.8	
3.5052	-1.4	H	3.0	40.3	1.0	-40.7	-13.0	-27.7	
5.2578	-10.6	H	3.0	40.9	1.0	-50.5	-13.0	-37.5	
7.0104	-11.9	H	3.0	41.0	1.0	-51.9	-13.0	-38.9	
Rev. 03.03.09 Note: No other emissions were detected above the system noise floor.									

WCDMA B2

WCDMA
Band 2
REL99

UL Korea, Ltd Suwon Laboratory
Above 1GHz High Frequency Substitution Measurement

Company: Wisol
Project #: 16K23790
Date: 08-31-16
Test Engineer: JH Park
Configuration: EUT / X Position
Mode: Tx, REL99,1900MHz

Chamber

Pre-amplifier

Filter

Limit

Chamber 2

AFS42

Filter 1

Part 24

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1852.4MHz									
3.7048	-17.2	V	3.0	40.5	1.0	-56.7	-13.0	-43.7	
5.5572	-9.6	V	3.0	40.8	1.0	-49.4	-13.0	-36.4	
7.4096	-5.4	V	3.0	40.8	1.0	-45.2	-13.0	-32.2	
3.7048	-17.2	H	3.0	40.5	1.0	-56.7	-13.0	-43.7	
5.5572	-15.8	H	3.0	40.8	1.0	-55.6	-13.0	-42.6	
7.4096	-12.7	H	3.0	40.8	1.0	-52.5	-13.0	-39.5	
Mid Ch, 1880MHz									
3.7600	-15.5	V	3.0	40.5	1.0	-55.0	-13.0	-42.0	
5.6400	-9.2	V	3.0	40.8	1.0	-49.0	-13.0	-36.0	
7.5200	-2.9	V	3.0	40.7	1.0	-42.7	-13.0	-29.7	
3.7600	-15.7	H	3.0	40.5	1.0	-55.2	-13.0	-42.2	
5.6400	-13.9	H	3.0	40.8	1.0	-53.7	-13.0	-40.7	
7.5200	-11.1	H	3.0	40.7	1.0	-50.8	-13.0	-37.8	
High Ch, 1907.6MHz									
3.8152	-18.8	V	3.0	40.6	1.0	-58.4	-13.0	-45.4	
5.7228	-8.4	V	3.0	40.8	1.0	-48.2	-13.0	-35.2	
7.6304	-5.4	V	3.0	40.7	1.0	-45.1	-13.0	-32.1	
3.8152	-17.8	H	3.0	40.6	1.0	-57.4	-13.0	-44.4	
5.7228	-12.4	H	3.0	40.8	1.0	-52.2	-13.0	-39.2	
7.6304	-13.0	H	3.0	40.7	1.0	-52.6	-13.0	-39.6	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

WCDMA
Band 2
HSDPA

UL Korea, Ltd Suwon Laboratory
Above 1GHz High Frequency Substitution Measurement

Company: Wisol
Project #: 16K23790
Date: 08-31-16
Test Engineer: JH Park
Configuration: EUT / X Position
Mode: Tx, HSDPA,1900MHz

Chamber

Pre-amplifier

Filter

Limit

Chamber 2

AFS42

Filter 1

Part 24

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1852.4MHz									
3.7048	-17.4	V	3.0	40.5	1.0	-56.9	-13.0	-43.9	
5.5572	-10.5	V	3.0	40.8	1.0	-50.3	-13.0	-37.3	
7.4096	-6.6	V	3.0	40.8	1.0	-46.4	-13.0	-33.4	
3.7048	-18.5	H	3.0	40.5	1.0	-58.0	-13.0	-45.0	
5.5572	-15.0	H	3.0	40.8	1.0	-54.8	-13.0	-41.8	
7.4096	-13.3	H	3.0	40.8	1.0	-53.1	-13.0	-40.1	
Mid Ch, 1880MHz									
3.7600	-16.6	V	3.0	40.5	1.0	-56.1	-13.0	-43.1	
5.6400	-9.7	V	3.0	40.8	1.0	-49.5	-13.0	-36.5	
7.5200	-4.8	V	3.0	40.7	1.0	-44.6	-13.0	-31.6	
3.7600	-16.5	H	3.0	40.5	1.0	-56.0	-13.0	-43.0	
5.6400	-15.5	H	3.0	40.8	1.0	-55.3	-13.0	-42.3	
7.5200	-11.5	H	3.0	40.7	1.0	-51.3	-13.0	-38.3	
High Ch, 1907.6MHz									
3.8152	-17.6	V	3.0	40.6	1.0	-57.2	-13.0	-44.2	
5.7228	-9.3	V	3.0	40.8	1.0	-49.1	-13.0	-36.1	
7.6304	-7.1	V	3.0	40.7	1.0	-46.8	-13.0	-33.8	
3.8152	-18.0	H	3.0	40.6	1.0	-57.5	-13.0	-44.5	
5.7228	-13.6	H	3.0	40.8	1.0	-53.4	-13.0	-40.4	
7.6304	-14.5	H	3.0	40.7	1.0	-54.2	-13.0	-41.2	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

LTE Band 5

LTE Band 5 10MHz QPSK	UL Korea, Ltd Suwon Laboratory Above 1GHz High Frequency Substitution Measurement																																																																																																																																																																																																																																				
	Company:		Wisol																																																																																																																																																																																																																																		
	Project #:		16K23790																																																																																																																																																																																																																																		
	Date:		09-06-16																																																																																																																																																																																																																																		
	Test Engineer:		JH Park																																																																																																																																																																																																																																		
	Configuration:		EUT / X Position																																																																																																																																																																																																																																		
	Mode:		TX, LTE BAND 5, 10MHz BW,QPSK																																																																																																																																																																																																																																		
	Chamber		Pre-amplifier		Filter		Limit																																																																																																																																																																																																																														
	Chamber 2		AFS42		Filter 1		Part 22																																																																																																																																																																																																																														
<table><tr><th>f GHz</th><th>SG reading (dBm)</th><th>Ant. Pol. (H/V)</th><th>Distance (m)</th><th>Preamp (dB)</th><th>Filter (dB)</th><th>EIRP (dBm)</th><th>Limit (dBm)</th><th>Delta (dB)</th><th>Notes</th></tr><tr><td colspan="10">Low Channel (829MHz)</td></tr><tr><td>1.6580</td><td>-23.6</td><td>V</td><td>3.0</td><td>39.1</td><td>1.0</td><td>-61.7</td><td>-13.0</td><td>-48.7</td><td></td></tr><tr><td>2.4870</td><td>-20.3</td><td>V</td><td>3.0</td><td>39.5</td><td>1.0</td><td>-58.8</td><td>-13.0</td><td>-45.8</td><td></td></tr><tr><td>3.3160</td><td>-19.8</td><td>V</td><td>3.0</td><td>40.1</td><td>1.0</td><td>-58.9</td><td>-13.0</td><td>-45.9</td><td></td></tr><tr><td>1.6580</td><td>-25.2</td><td>H</td><td>3.0</td><td>39.1</td><td>1.0</td><td>-63.3</td><td>-13.0</td><td>-50.3</td><td></td></tr><tr><td>2.4870</td><td>-22.8</td><td>H</td><td>3.0</td><td>39.5</td><td>1.0</td><td>-61.3</td><td>-13.0</td><td>-48.3</td><td></td></tr><tr><td>3.3160</td><td>-21.1</td><td>H</td><td>3.0</td><td>40.1</td><td>1.0</td><td>-60.2</td><td>-13.0</td><td>-47.2</td><td></td></tr><tr><td colspan="10">Mid Channel (836.5MHz)</td></tr><tr><td>1.6730</td><td>-18.6</td><td>V</td><td>3.0</td><td>39.1</td><td>1.0</td><td>-56.7</td><td>-13.0</td><td>-43.7</td><td></td></tr><tr><td>2.5090</td><td>-21.6</td><td>V</td><td>3.0</td><td>39.5</td><td>1.0</td><td>-60.1</td><td>-13.0</td><td>-47.1</td><td></td></tr><tr><td>3.3460</td><td>-21.5</td><td>V</td><td>3.0</td><td>40.1</td><td>1.0</td><td>-60.7</td><td>-13.0</td><td>-47.7</td><td></td></tr><tr><td>1.6730</td><td>-23.7</td><td>H</td><td>3.0</td><td>39.1</td><td>1.0</td><td>-61.8</td><td>-13.0</td><td>-48.8</td><td></td></tr><tr><td>2.5090</td><td>-23.5</td><td>H</td><td>3.0</td><td>39.5</td><td>1.0</td><td>-62.1</td><td>-13.0</td><td>-49.1</td><td></td></tr><tr><td>3.3460</td><td>-20.9</td><td>H</td><td>3.0</td><td>40.1</td><td>1.0</td><td>-60.0</td><td>-13.0</td><td>-47.0</td><td></td></tr><tr><td colspan="10">High Channel (844MHz)</td></tr><tr><td>1.6880</td><td>-23.3</td><td>V</td><td>3.0</td><td>39.1</td><td>1.0</td><td>-61.5</td><td>-13.0</td><td>-48.5</td><td></td></tr><tr><td>2.5320</td><td>-22.3</td><td>V</td><td>3.0</td><td>39.5</td><td>1.0</td><td>-60.8</td><td>-13.0</td><td>-47.8</td><td></td></tr><tr><td>3.3760</td><td>-20.6</td><td>V</td><td>3.0</td><td>40.2</td><td>1.0</td><td>-59.7</td><td>-13.0</td><td>-46.7</td><td></td></tr><tr><td>1.6880</td><td>-24.9</td><td>H</td><td>3.0</td><td>39.1</td><td>1.0</td><td>-63.0</td><td>-13.0</td><td>-50.0</td><td></td></tr><tr><td>2.5320</td><td>-22.4</td><td>H</td><td>3.0</td><td>39.5</td><td>1.0</td><td>-61.0</td><td>-13.0</td><td>-48.0</td><td></td></tr><tr><td>3.3760</td><td>-21.1</td><td>H</td><td>3.0</td><td>40.2</td><td>1.0</td><td>-60.2</td><td>-13.0</td><td>-47.2</td><td></td></tr></table>										f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes	Low Channel (829MHz)										1.6580	-23.6	V	3.0	39.1	1.0	-61.7	-13.0	-48.7		2.4870	-20.3	V	3.0	39.5	1.0	-58.8	-13.0	-45.8		3.3160	-19.8	V	3.0	40.1	1.0	-58.9	-13.0	-45.9		1.6580	-25.2	H	3.0	39.1	1.0	-63.3	-13.0	-50.3		2.4870	-22.8	H	3.0	39.5	1.0	-61.3	-13.0	-48.3		3.3160	-21.1	H	3.0	40.1	1.0	-60.2	-13.0	-47.2		Mid Channel (836.5MHz)										1.6730	-18.6	V	3.0	39.1	1.0	-56.7	-13.0	-43.7		2.5090	-21.6	V	3.0	39.5	1.0	-60.1	-13.0	-47.1		3.3460	-21.5	V	3.0	40.1	1.0	-60.7	-13.0	-47.7		1.6730	-23.7	H	3.0	39.1	1.0	-61.8	-13.0	-48.8		2.5090	-23.5	H	3.0	39.5	1.0	-62.1	-13.0	-49.1		3.3460	-20.9	H	3.0	40.1	1.0	-60.0	-13.0	-47.0		High Channel (844MHz)										1.6880	-23.3	V	3.0	39.1	1.0	-61.5	-13.0	-48.5		2.5320	-22.3	V	3.0	39.5	1.0	-60.8	-13.0	-47.8		3.3760	-20.6	V	3.0	40.2	1.0	-59.7	-13.0	-46.7		1.6880	-24.9	H	3.0	39.1	1.0	-63.0	-13.0	-50.0		2.5320	-22.4	H	3.0	39.5	1.0	-61.0	-13.0	-48.0		3.3760	-21.1	H	3.0	40.2	1.0	-60.2	-13.0	-47.2	
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes																																																																																																																																																																																																																												
Low Channel (829MHz)																																																																																																																																																																																																																																					
1.6580	-23.6	V	3.0	39.1	1.0	-61.7	-13.0	-48.7																																																																																																																																																																																																																													
2.4870	-20.3	V	3.0	39.5	1.0	-58.8	-13.0	-45.8																																																																																																																																																																																																																													
3.3160	-19.8	V	3.0	40.1	1.0	-58.9	-13.0	-45.9																																																																																																																																																																																																																													
1.6580	-25.2	H	3.0	39.1	1.0	-63.3	-13.0	-50.3																																																																																																																																																																																																																													
2.4870	-22.8	H	3.0	39.5	1.0	-61.3	-13.0	-48.3																																																																																																																																																																																																																													
3.3160	-21.1	H	3.0	40.1	1.0	-60.2	-13.0	-47.2																																																																																																																																																																																																																													
Mid Channel (836.5MHz)																																																																																																																																																																																																																																					
1.6730	-18.6	V	3.0	39.1	1.0	-56.7	-13.0	-43.7																																																																																																																																																																																																																													
2.5090	-21.6	V	3.0	39.5	1.0	-60.1	-13.0	-47.1																																																																																																																																																																																																																													
3.3460	-21.5	V	3.0	40.1	1.0	-60.7	-13.0	-47.7																																																																																																																																																																																																																													
1.6730	-23.7	H	3.0	39.1	1.0	-61.8	-13.0	-48.8																																																																																																																																																																																																																													
2.5090	-23.5	H	3.0	39.5	1.0	-62.1	-13.0	-49.1																																																																																																																																																																																																																													
3.3460	-20.9	H	3.0	40.1	1.0	-60.0	-13.0	-47.0																																																																																																																																																																																																																													
High Channel (844MHz)																																																																																																																																																																																																																																					
1.6880	-23.3	V	3.0	39.1	1.0	-61.5	-13.0	-48.5																																																																																																																																																																																																																													
2.5320	-22.3	V	3.0	39.5	1.0	-60.8	-13.0	-47.8																																																																																																																																																																																																																													
3.3760	-20.6	V	3.0	40.2	1.0	-59.7	-13.0	-46.7																																																																																																																																																																																																																													
1.6880	-24.9	H	3.0	39.1	1.0	-63.0	-13.0	-50.0																																																																																																																																																																																																																													
2.5320	-22.4	H	3.0	39.5	1.0	-61.0	-13.0	-48.0																																																																																																																																																																																																																													
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3.3460	-20.4	V	3.0	40.1	1.0	-59.6	-13.0	-46.6																																																																																																																																																																																																																													
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2.4765	-22.3	V	3.0	39.5	1.0	-60.8	-13.0	-47.8																																																																																																																																																																																																																													
3.3020	-20.3	V	3.0	40.1	1.0	-59.4	-13.0	-46.4																																																																																																																																																																																																																													
1.6510	-25.4	H	3.0	39.1	1.0	-63.6	-13.0	-50.6																																																																																																																																																																																																																													
2.4765	-23.2	H	3.0	39.5	1.0	-61.8	-13.0	-48.8																																																																																																																																																																																																																													
3.3020	-21.1	H	3.0	40.1	1.0	-60.2	-13.0	-47.2																																																																																																																																																																																																																													
Mid Channel (836.5MHz)																																																																																																																																																																																																																																					
1.6730	-19.7	V	3.0	39.1	1.0	-57.8	-13.0	-44.8																																																																																																																																																																																																																													
2.5090	-22.3	V	3.0	39.5	1.0	-60.8	-13.0	-47.8																																																																																																																																																																																																																													
3.3460	-21.0	V	3.0	40.1	1.0	-60.1	-13.0	-47.1																																																																																																																																																																																																																													
1.6730	-23.7	H	3.0	39.1	1.0	-61.8	-13.0	-48.8																																																																																																																																																																																																																													
2.5090	-23.8	H	3.0	39.5	1.0	-62.3	-13.0	-49.3																																																																																																																																																																																																																													
3.3460	-21.5	H	3.0	40.1	1.0	-60.6	-13.0	-47.6																																																																																																																																																																																																																													
High Channel (847.5MHz)																																																																																																																																																																																																																																					
1.6950	-18.1	V	3.0	39.1	1.0	-56.2	-13.0	-43.2																																																																																																																																																																																																																													
2.5425	-21.1	V	3.0	39.6	1.0	-59.6	-13.0	-46.6																																																																																																																																																																																																																													
3.3900	-20.0	V	3.0	40.2	1.0	-59.2	-13.0	-46.2																																																																																																																																																																																																																													
1.6950	-25.5	H	3.0	39.1	1.0	-63.6	-13.0	-50.6																																																																																																																																																																																																																													
2.5425	-22.4	H	3.0	39.6	1.0	-60.9	-13.0	-47.9																																																																																																																																																																																																																													
3.3900	-21.2	H	3.0	40.2	1.0	-60.3	-13.0	-47.3																																																																																																																																																																																																																													
Rev. 03.03.09 Note: No other emissions were detected above the system noise floor.																																																																																																																																																																																																																																					

LTE Band 5 3MHz 16QAM	UL Korea, Ltd Suwon Laboratory Above 1GHz High Frequency Substitution Measurement																																																																																																																																																																																																																																				
	Company:		Wisol																																																																																																																																																																																																																																		
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	Test Engineer:		JH Park																																																																																																																																																																																																																																		
	Configuration:		EUT / X Position																																																																																																																																																																																																																																		
	Mode:		TX LTE BAND 5, 3MHz BW,16QAM																																																																																																																																																																																																																																		
	Chamber		Pre-amplifier		Filter		Limit																																																																																																																																																																																																																														
	Chamber 2		AFS42		Filter 1		Part 22																																																																																																																																																																																																																														
<table><tr><th>f GHz</th><th>SG reading (dBm)</th><th>Ant. Pol. (H/V)</th><th>Distance (m)</th><th>Preamp (dB)</th><th>Filter (dB)</th><th>EIRP (dBm)</th><th>Limit (dBm)</th><th>Delta (dB)</th><th>Notes</th></tr><tr><td colspan="10">Low Channel (825.5MHz)</td></tr><tr><td>1.6510</td><td>-25.0</td><td>V</td><td>3.0</td><td>39.1</td><td>1.0</td><td>-63.1</td><td>-13.0</td><td>-50.1</td><td></td></tr><tr><td>2.4765</td><td>-21.0</td><td>V</td><td>3.0</td><td>39.5</td><td>1.0</td><td>-59.6</td><td>-13.0</td><td>-46.6</td><td></td></tr><tr><td>3.3020</td><td>-20.7</td><td>V</td><td>3.0</td><td>40.1</td><td>1.0</td><td>-59.8</td><td>-13.0</td><td>-46.8</td><td></td></tr><tr><td>1.6510</td><td>-25.4</td><td>H</td><td>3.0</td><td>39.1</td><td>1.0</td><td>-63.5</td><td>-13.0</td><td>-50.5</td><td></td></tr><tr><td>2.4765</td><td>-23.9</td><td>H</td><td>3.0</td><td>39.5</td><td>1.0</td><td>-62.4</td><td>-13.0</td><td>-49.4</td><td></td></tr><tr><td>3.3020</td><td>-21.2</td><td>H</td><td>3.0</td><td>40.1</td><td>1.0</td><td>-60.3</td><td>-13.0</td><td>-47.3</td><td></td></tr><tr><td colspan="10">Mid Channel (836.5MHz)</td></tr><tr><td>1.6730</td><td>-19.7</td><td>V</td><td>3.0</td><td>39.1</td><td>1.0</td><td>-57.8</td><td>-13.0</td><td>-44.8</td><td></td></tr><tr><td>2.5090</td><td>-22.6</td><td>V</td><td>3.0</td><td>39.5</td><td>1.0</td><td>-61.1</td><td>-13.0</td><td>-48.1</td><td></td></tr><tr><td>3.3460</td><td>-20.2</td><td>V</td><td>3.0</td><td>40.1</td><td>1.0</td><td>-59.4</td><td>-13.0</td><td>-46.4</td><td></td></tr><tr><td>1.6730</td><td>-24.5</td><td>H</td><td>3.0</td><td>39.1</td><td>1.0</td><td>-62.6</td><td>-13.0</td><td>-49.6</td><td></td></tr><tr><td>2.5090</td><td>-22.9</td><td>H</td><td>3.0</td><td>39.5</td><td>1.0</td><td>-61.4</td><td>-13.0</td><td>-48.4</td><td></td></tr><tr><td>3.3460</td><td>-21.5</td><td>H</td><td>3.0</td><td>40.1</td><td>1.0</td><td>-60.6</td><td>-13.0</td><td>-47.6</td><td></td></tr><tr><td colspan="10">High Channel (847.5MHz)</td></tr><tr><td>1.6950</td><td>-19.0</td><td>V</td><td>3.0</td><td>39.1</td><td>1.0</td><td>-57.1</td><td>-13.0</td><td>-44.1</td><td></td></tr><tr><td>2.5425</td><td>-21.6</td><td>V</td><td>3.0</td><td>39.6</td><td>1.0</td><td>-60.1</td><td>-13.0</td><td>-47.1</td><td></td></tr><tr><td>3.3900</td><td>-20.2</td><td>V</td><td>3.0</td><td>40.2</td><td>1.0</td><td>-59.4</td><td>-13.0</td><td>-46.4</td><td></td></tr><tr><td>1.6950</td><td>-24.8</td><td>H</td><td>3.0</td><td>39.1</td><td>1.0</td><td>-63.0</td><td>-13.0</td><td>-50.0</td><td></td></tr><tr><td>2.5425</td><td>-21.7</td><td>H</td><td>3.0</td><td>39.6</td><td>1.0</td><td>-60.3</td><td>-13.0</td><td>-47.3</td><td></td></tr><tr><td>3.3900</td><td>-21.1</td><td>H</td><td>3.0</td><td>40.2</td><td>1.0</td><td>-60.3</td><td>-13.0</td><td>-47.3</td><td></td></tr></table>										f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes	Low Channel (825.5MHz)										1.6510	-25.0	V	3.0	39.1	1.0	-63.1	-13.0	-50.1		2.4765	-21.0	V	3.0	39.5	1.0	-59.6	-13.0	-46.6		3.3020	-20.7	V	3.0	40.1	1.0	-59.8	-13.0	-46.8		1.6510	-25.4	H	3.0	39.1	1.0	-63.5	-13.0	-50.5		2.4765	-23.9	H	3.0	39.5	1.0	-62.4	-13.0	-49.4		3.3020	-21.2	H	3.0	40.1	1.0	-60.3	-13.0	-47.3		Mid Channel (836.5MHz)										1.6730	-19.7	V	3.0	39.1	1.0	-57.8	-13.0	-44.8		2.5090	-22.6	V	3.0	39.5	1.0	-61.1	-13.0	-48.1		3.3460	-20.2	V	3.0	40.1	1.0	-59.4	-13.0	-46.4		1.6730	-24.5	H	3.0	39.1	1.0	-62.6	-13.0	-49.6		2.5090	-22.9	H	3.0	39.5	1.0	-61.4	-13.0	-48.4		3.3460	-21.5	H	3.0	40.1	1.0	-60.6	-13.0	-47.6		High Channel (847.5MHz)										1.6950	-19.0	V	3.0	39.1	1.0	-57.1	-13.0	-44.1		2.5425	-21.6	V	3.0	39.6	1.0	-60.1	-13.0	-47.1		3.3900	-20.2	V	3.0	40.2	1.0	-59.4	-13.0	-46.4		1.6950	-24.8	H	3.0	39.1	1.0	-63.0	-13.0	-50.0		2.5425	-21.7	H	3.0	39.6	1.0	-60.3	-13.0	-47.3		3.3900	-21.1	H	3.0	40.2	1.0	-60.3	-13.0	-47.3	
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes																																																																																																																																																																																																																												
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1.6510	-25.0	V	3.0	39.1	1.0	-63.1	-13.0	-50.1																																																																																																																																																																																																																													
2.4765	-21.0	V	3.0	39.5	1.0	-59.6	-13.0	-46.6																																																																																																																																																																																																																													
3.3020	-20.7	V	3.0	40.1	1.0	-59.8	-13.0	-46.8																																																																																																																																																																																																																													
1.6510	-25.4	H	3.0	39.1	1.0	-63.5	-13.0	-50.5																																																																																																																																																																																																																													
2.4765	-23.9	H	3.0	39.5	1.0	-62.4	-13.0	-49.4																																																																																																																																																																																																																													
3.3020	-21.2	H	3.0	40.1	1.0	-60.3	-13.0	-47.3																																																																																																																																																																																																																													
Mid Channel (836.5MHz)																																																																																																																																																																																																																																					
1.6730	-19.7	V	3.0	39.1	1.0	-57.8	-13.0	-44.8																																																																																																																																																																																																																													
2.5090	-22.6	V	3.0	39.5	1.0	-61.1	-13.0	-48.1																																																																																																																																																																																																																													
3.3460	-20.2	V	3.0	40.1	1.0	-59.4	-13.0	-46.4																																																																																																																																																																																																																													
1.6730	-24.5	H	3.0	39.1	1.0	-62.6	-13.0	-49.6																																																																																																																																																																																																																													
2.5090	-22.9	H	3.0	39.5	1.0	-61.4	-13.0	-48.4																																																																																																																																																																																																																													
3.3460	-21.5	H	3.0	40.1	1.0	-60.6	-13.0	-47.6																																																																																																																																																																																																																													
High Channel (847.5MHz)																																																																																																																																																																																																																																					
1.6950	-19.0	V	3.0	39.1	1.0	-57.1	-13.0	-44.1																																																																																																																																																																																																																													
2.5425	-21.6	V	3.0	39.6	1.0	-60.1	-13.0	-47.1																																																																																																																																																																																																																													
3.3900	-20.2	V	3.0	40.2	1.0	-59.4	-13.0	-46.4																																																																																																																																																																																																																													
1.6950	-24.8	H	3.0	39.1	1.0	-63.0	-13.0	-50.0																																																																																																																																																																																																																													
2.5425	-21.7	H	3.0	39.6	1.0	-60.3	-13.0	-47.3																																																																																																																																																																																																																													
3.3900	-21.1	H	3.0	40.2	1.0	-60.3	-13.0	-47.3																																																																																																																																																																																																																													
Rev. 03.03.09 Note: No other emissions were detected above the system noise floor.																																																																																																																																																																																																																																					

LTE Band 5 1.4MHz QPSK	UL Korea, Ltd Suwon Laboratory Above 1GHz High Frequency Substitution Measurement Company: Wisol Project #: 16K23790 Date: 09-06-16 Test Engineer: JH Park Configuration: EUT / X Position Mode: TX, LTE BAND 5, 1.4MHz BW,QPSK									
	Chamber Pre-amplifier Filter Limit Chamber 2 AFS42 Filter 1 Part 22									
	f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Channel (824.7MHz)									
	1.6494	-25.0	V	3.0	39.1	1.0	-63.1	-13.0	-50.1	
	2.4741	-21.2	V	3.0	39.5	1.0	-59.7	-13.0	-46.7	
	3.2988	-20.7	V	3.0	40.1	1.0	-59.8	-13.0	-46.8	
	1.6494	-25.3	H	3.0	39.1	1.0	-63.5	-13.0	-50.5	
	2.4741	-23.7	H	3.0	39.5	1.0	-62.2	-13.0	-49.2	
	3.2988	-21.8	H	3.0	40.1	1.0	-60.9	-13.0	-47.9	
	Mid Channel (836.5MHz)									
	1.6730	-17.8	V	3.0	39.1	1.0	-56.0	-13.0	-43.0	
	2.5090	-22.6	V	3.0	39.5	1.0	-61.2	-13.0	-48.2	
	3.3460	-20.2	V	3.0	40.1	1.0	-59.3	-13.0	-46.3	
	1.6730	-24.2	H	3.0	39.1	1.0	-62.4	-13.0	-49.4	
	2.5090	-23.7	H	3.0	39.5	1.0	-62.3	-13.0	-49.3	
	3.3460	-21.0	H	3.0	40.1	1.0	-60.2	-13.0	-47.2	
	High Channel (848.3MHz)									
	1.6966	-19.0	V	3.0	39.1	1.0	-57.1	-13.0	-44.1	
	2.5449	-21.1	V	3.0	39.6	1.0	-59.6	-13.0	-46.6	
	3.3932	-21.0	V	3.0	40.2	1.0	-60.1	-13.0	-47.1	
	1.6966	-22.1	H	3.0	39.1	1.0	-60.2	-13.0	-47.2	
	2.5449	-23.2	H	3.0	39.6	1.0	-61.7	-13.0	-48.7	
	3.3932	-20.7	H	3.0	40.2	1.0	-59.9	-13.0	-46.9	
	Rev. 03.03.09 Note: No other emissions were detected above the system noise floor.									

LTE Band 5 1.4MHz 16QAM	UL Korea, Ltd Suwon Laboratory Above 1GHz High Frequency Substitution Measurement Company: Wisol Project #: 16K23790 Date: 09-06-16 Test Engineer: JH Park Configuration: EUT / X Position Mode: TX, LTE BAND 5, 1.4MHz BW,16QAM									
	Chamber Pre-amplifier Filter Limit Chamber 2 AFS42 Filter 1 Part 22									
	f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Channel (824.7MHz)									
	1.6494	-25.6	V	3.0	39.1	1.0	-63.7	-13.0	-50.7	
	2.4741	-20.7	V	3.0	39.5	1.0	-59.2	-13.0	-46.2	
	3.2988	-21.3	V	3.0	40.1	1.0	-60.4	-13.0	-47.4	
	1.6494	-25.1	H	3.0	39.1	1.0	-63.3	-13.0	-50.3	
	2.4741	-23.5	H	3.0	39.5	1.0	-62.0	-13.0	-49.0	
	3.2988	-21.3	H	3.0	40.1	1.0	-60.4	-13.0	-47.4	
	Mid Channel (836.5MHz)									
	1.6730	-18.9	V	3.0	39.1	1.0	-57.0	-13.0	-44.0	
	2.5090	-22.7	V	3.0	39.5	1.0	-61.2	-13.0	-48.2	
	3.3460	-21.4	V	3.0	40.1	1.0	-60.5	-13.0	-47.5	
	1.6730	-22.8	H	3.0	39.1	1.0	-60.9	-13.0	-47.9	
	2.5090	-23.6	H	3.0	39.5	1.0	-62.1	-13.0	-49.1	
	3.3460	-21.3	H	3.0	40.1	1.0	-60.5	-13.0	-47.5	
	High Channel (848.3MHz)									
	1.6966	-15.8	V	3.0	39.1	1.0	-53.9	-13.0	-40.9	
	2.5449	-22.3	V	3.0	39.6	1.0	-60.8	-13.0	-47.8	
	3.3932	-20.4	V	3.0	40.2	1.0	-59.6	-13.0	-46.6	
	1.6966	-20.0	H	3.0	39.1	1.0	-58.1	-13.0	-45.1	
	2.5449	-22.5	H	3.0	39.6	1.0	-61.0	-13.0	-48.0	
	3.3932	-21.1	H	3.0	40.2	1.0	-60.3	-13.0	-47.3	
	Rev. 03.03.09 Note: No other emissions were detected above the system noise floor.									

LTE Band 4

LTE Band 4 20MHz QPSK	UL Korea, Ltd Suwon Laboratory Above 1GHz High Frequency Substitution Measurement Company: Wisol Project #: 16K23790 Date: 09-06-16 Test Engineer: JH Park Configuration: EUT / X-Position Mode: TX, LTE BAND 4, 20MHz BW, QPSK									
	Chamber Pre-amplifier Filter Limit Chamber 2 AFS42 Filter 1 FCC Part 27									
	f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Channel (1720MHz)									
	3.4400	0.0	V	3.0	40.2	1.0	-39.3	-13.0	-26.3	
	5.1600	-5.0	V	3.0	40.9	1.0	-44.9	-13.0	-31.9	
	6.8800	4.3	V	3.0	41.0	1.0	-35.7	-13.0	-22.7	
	3.4400	-1.7	H	3.0	40.2	1.0	-40.9	-13.0	-27.9	
	5.1600	-5.1	H	3.0	40.9	1.0	-45.0	-13.0	-32.0	
	6.8800	-3.7	H	3.0	41.0	1.0	-43.7	-13.0	-30.7	
	Mid Channel (1732.5MHz)									
	3.4650	-1.3	V	3.0	40.3	1.0	-40.6	-13.0	-27.6	
	5.1975	-2.5	V	3.0	40.9	1.0	-42.4	-13.0	-29.4	
	6.9300	6.5	V	3.0	41.0	1.0	-33.5	-13.0	-20.5	
	3.4650	0.5	H	3.0	40.3	1.0	-38.7	-13.0	-25.7	
	5.1975	-5.4	H	3.0	40.9	1.0	-45.3	-13.0	-32.3	
	6.9300	2.1	H	3.0	41.0	1.0	-37.9	-13.0	-24.9	
	High Channel (1745MHz)									
	3.4900	3.1	V	3.0	40.3	1.0	-36.2	-13.0	-23.2	
	5.2350	-2.9	V	3.0	40.9	1.0	-42.8	-13.0	-29.8	
	6.9800	6.2	V	3.0	41.0	1.0	-33.8	-13.0	-20.8	
	3.4900	0.4	H	3.0	40.3	1.0	-38.8	-13.0	-25.8	
	5.2350	-6.2	H	3.0	40.9	1.0	-46.1	-13.0	-33.1	
	6.9800	0.4	H	3.0	41.0	1.0	-39.6	-13.0	-26.6	
	Rev. 03.03.09 Note: No other emissions were detected above the system noise floor.									
LTE Band 4 20MHz 16QAM	UL Korea, Ltd Suwon Laboratory Above 1GHz High Frequency Substitution Measurement Company: Wisol Project #: 16K23790 Date: 09-06-16 Test Engineer: JH Park Configuration: EUT / X-Position Mode: TX, LTE BAND 4, 20MHz BW, 16QAM									
	Chamber Pre-amplifier Filter Limit Chamber 2 AFS42 Filter 1 FCC Part 27									
	f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Channel (1720MHz)									
	3.4400	0.1	V	3.0	40.2	1.0	-39.1	-13.0	-26.1	
	5.1600	-6.2	V	3.0	40.9	1.0	-46.1	-13.0	-33.1	
	6.8800	4.4	V	3.0	41.0	1.0	-35.6	-13.0	-22.6	
	3.4400	-1.7	H	3.0	40.2	1.0	-41.0	-13.0	-28.0	
	5.1600	-5.9	H	3.0	40.9	1.0	-45.7	-13.0	-32.7	
	6.8800	-4.5	H	3.0	41.0	1.0	-44.5	-13.0	-31.5	
	Mid Channel (1732.5MHz)									
	3.4650	-0.9	V	3.0	40.3	1.0	-40.2	-13.0	-27.2	
	5.1975	-2.3	V	3.0	40.9	1.0	-42.2	-13.0	-29.2	
	6.9300	7.8	V	3.0	41.0	1.0	-32.2	-13.0	-19.2	
	3.4650	0.6	H	3.0	40.3	1.0	-38.6	-13.0	-25.6	
	5.1975	-4.9	H	3.0	40.9	1.0	-44.8	-13.0	-31.8	
	6.9300	3.4	H	3.0	41.0	1.0	-36.6	-13.0	-23.6	
	High Channel (1745MHz)									
	3.4900	3.9	V	3.0	40.3	1.0	-35.4	-13.0	-22.4	
	5.2350	-2.5	V	3.0	40.9	1.0	-42.4	-13.0	-29.4	
	6.9800	7.1	V	3.0	41.0	1.0	-32.9	-13.0	-19.9	
	3.4900	0.9	H	3.0	40.3	1.0	-38.4	-13.0	-25.4	
	5.2350	-6.2	H	3.0	40.9	1.0	-46.1	-13.0	-33.1	
	6.9800	1.1	H	3.0	41.0	1.0	-38.9	-13.0	-25.9	
	Rev. 03.03.09 Note: No other emissions were detected above the system noise floor.									

LTE Band 4 15MHz QPSK	UL Korea, Ltd Suwon Laboratory Above 1GHz High Frequency Substitution Measurement Company: Wisol Project #: 16K23790 Date: 09-06-16 Test Engineer: JH Park Configuration: EUT / X-Position Mode: TX, LTE BAND 4, 15MHz BW,QPSK									
	Chamber Pre-amplifier Filter Limit Chamber 2 AFS42 Filter 1 FCC Part 27									
	f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Channel (1717.5MHz)									
	3.4350	0.9	V	3.0	40.2	1.0	-38.3	-13.0	-25.3	
	5.1525	-2.1	V	3.0	40.9	1.0	-41.9	-13.0	-28.9	
	6.8700	5.8	V	3.0	41.0	1.0	-34.1	-13.0	-21.1	
	3.4350	1.0	H	3.0	40.2	1.0	-38.2	-13.0	-25.2	
	5.1525	-5.7	H	3.0	40.9	1.0	-45.5	-13.0	-32.5	
	6.8700	2.0	H	3.0	41.0	1.0	-37.9	-13.0	-24.9	
	Mid Channel (1732.5MHz)									
	3.4650	-1.2	V	3.0	40.3	1.0	-40.5	-13.0	-27.5	
	5.1975	-3.4	V	3.0	40.9	1.0	-43.3	-13.0	-30.3	
	6.9300	7.5	V	3.0	41.0	1.0	-32.5	-13.0	-19.5	
	3.4650	-0.3	H	3.0	40.3	1.0	-39.5	-13.0	-26.5	
	5.1975	-5.1	H	3.0	40.9	1.0	-44.9	-13.0	-31.9	
	6.9300	-2.5	H	3.0	41.0	1.0	-42.5	-13.0	-29.5	
	High Channel (1747.5MHz)									
	3.4950	1.7	V	3.0	40.3	1.0	-37.6	-13.0	-24.6	
	5.2425	-2.8	V	3.0	40.9	1.0	-42.7	-13.0	-29.7	
	6.9900	5.1	V	3.0	41.0	1.0	-34.9	-13.0	-21.9	
	3.4950	0.6	H	3.0	40.3	1.0	-38.7	-13.0	-25.7	
	5.2425	-7.0	H	3.0	40.9	1.0	-46.8	-13.0	-33.8	
	6.9900	-5.3	H	3.0	41.0	1.0	-45.3	-13.0	-32.3	
	Rev. 03.03.09 Note: No other emissions were detected above the system noise floor.									
LTE Band 4 15MHz 16QAM	UL Korea, Ltd Suwon Laboratory Above 1GHz High Frequency Substitution Measurement Company: Wisol Project #: 16K23790 Date: 09-06-16 Test Engineer: JH Park Configuration: EUT / X-Position Mode: TX, LTE BAND 4, 15MHz BW,16QAM									
	Chamber Pre-amplifier Filter Limit Chamber 2 AFS42 Filter 1 FCC Part 27									
	f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Channel (1717.5MHz)									
	3.4350	1.0	V	3.0	40.2	1.0	-38.3	-13.0	-25.3	
	5.1525	-1.2	V	3.0	40.9	1.0	-41.0	-13.0	-28.0	
	6.8700	6.6	V	3.0	41.0	1.0	-33.4	-13.0	-20.4	
	3.4350	1.5	H	3.0	40.2	1.0	-37.7	-13.0	-24.7	
	5.1525	-5.4	H	3.0	40.9	1.0	-45.3	-13.0	-32.3	
	6.8700	3.5	H	3.0	41.0	1.0	-36.5	-13.0	-23.5	
	Mid Channel (1732.5MHz)									
	3.4650	-0.3	V	3.0	40.3	1.0	-39.6	-13.0	-26.6	
	5.1975	-4.1	V	3.0	40.9	1.0	-44.0	-13.0	-31.0	
	6.9300	8.4	V	3.0	41.0	1.0	-31.6	-13.0	-18.6	
	3.4650	-0.3	H	3.0	40.3	1.0	-39.6	-13.0	-26.6	
	5.1975	-5.4	H	3.0	40.9	1.0	-45.3	-13.0	-32.3	
	6.9300	-2.2	H	3.0	41.0	1.0	-42.2	-13.0	-29.2	
	High Channel (1747.5MHz)									
	3.4950	1.7	V	3.0	40.3	1.0	-37.6	-13.0	-24.6	
	5.2425	-2.1	V	3.0	40.9	1.0	-41.9	-13.0	-28.9	
	6.9900	6.5	V	3.0	41.0	1.0	-33.5	-13.0	-20.5	
	3.4950	1.5	H	3.0	40.3	1.0	-37.8	-13.0	-24.8	
	5.2425	-5.9	H	3.0	40.9	1.0	-45.8	-13.0	-32.8	
	6.9900	-3.3	H	3.0	41.0	1.0	-43.3	-13.0	-30.3	
	Rev. 03.03.09 Note: No other emissions were detected above the system noise floor.									

LTE

Band 4

10MHz

QPSK

UL Korea, Ltd Suwon Laboratory

Above 1GHz High Frequency Substitution Measurement

Company: Wisol

Project #: 16K23790

Date: 09-06-16

Test Engineer: JH Park

Configuration: EUT / X-Position

Mode: TX, LTE BAND 4, 10MHz BW, QPSK

Chamber

Chamber 2

Pre-amplifier

AFS42

Filter

Filter 1

Limit

FCC Part 27

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Channel (1715MHz)									
3.4300	0.5	V	3.0	40.2	1.0	-38.8	-13.0	-25.8	
5.1450	-2.2	V	3.0	40.9	1.0	-42.1	-13.0	-29.1	
6.8600	6.7	V	3.0	41.0	1.0	-33.3	-13.0	-20.3	
3.4300	-1.6	H	3.0	40.2	1.0	-40.8	-13.0	-27.8	
5.1450	-4.0	H	3.0	40.9	1.0	-43.9	-13.0	-30.9	
6.8600	-1.7	H	3.0	41.0	1.0	-41.7	-13.0	-28.7	
Mid Channel (1732.5MHz)									
3.4650	-1.0	V	3.0	40.3	1.0	-40.2	-13.0	-27.2	
5.1975	-3.0	V	3.0	40.9	1.0	-42.8	-13.0	-29.8	
6.9300	7.6	V	3.0	41.0	1.0	-32.4	-13.0	-19.4	
3.4650	-0.7	H	3.0	40.3	1.0	-40.0	-13.0	-27.0	
5.1975	-5.3	H	3.0	40.9	1.0	-45.2	-13.0	-32.2	
6.9300	1.8	H	3.0	41.0	1.0	-38.2	-13.0	-25.2	
High Channel (1750MHz)									
3.5000	1.8	V	3.0	40.3	1.0	-37.5	-13.0	-24.5	
5.2500	-2.1	V	3.0	40.9	1.0	-41.9	-13.0	-28.9	
7.0000	5.7	V	3.0	41.0	1.0	-34.3	-13.0	-21.3	
3.5000	1.4	H	3.0	40.3	1.0	-37.9	-13.0	-24.9	
5.2500	-5.3	H	3.0	40.9	1.0	-45.2	-13.0	-32.2	
7.0000	-4.0	H	3.0	41.0	1.0	-44.0	-13.0	-31.0	
Rev. 03.03.09									
Note: No other emissions were detected above the system noise floor.									

LTE

Band 4

10MHz

16QAM

UL Korea, Ltd Suwon Laboratory

Above 1GHz High Frequency Substitution Measurement

Company: Wisol

Project #: 16K23790

Date: 09-06-16

Test Engineer: JH Park

Configuration: EUT / X-Position

Mode: TX, LTE BAND 4, 10MHz BW, 16QAM

Chamber

Chamber 2

Pre-amplifier

AFS42

Filter

Filter 1

Limit

FCC Part 27

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Channel (1715MHz)									
3.4300	1.0	V	3.0	40.2	1.0	-38.3	-13.0	-25.3	
5.1450	-2.1	V	3.0	40.9	1.0	-42.0	-13.0	-29.0	
6.8600	8.1	V	3.0	41.0	1.0	-31.9	-13.0	-18.9	
3.4300	-1.5	H	3.0	40.2	1.0	-40.7	-13.0	-27.7	
5.1450	-3.4	H	3.0	40.9	1.0	-43.3	-13.0	-30.3	
6.8600	-2.2	H	3.0	41.0	1.0	-42.1	-13.0	-29.1	
Mid Channel (1732.5MHz)									
3.4650	-1.3	V	3.0	40.3	1.0	-40.5	-13.0	-27.5	
5.1975	-2.5	V	3.0	40.9	1.0	-42.3	-13.0	-29.3	
6.9300	8.5	V	3.0	41.0	1.0	-31.5	-13.0	-18.5	
3.4650	-0.1	H	3.0	40.3	1.0	-39.4	-13.0	-26.4	
5.1975	-5.4	H	3.0	40.9	1.0	-45.3	-13.0	-32.3	
6.9300	3.3	H	3.0	41.0	1.0	-36.7	-13.0	-23.7	
High Channel (1750MHz)									
3.5000	1.8	V	3.0	40.3	1.0	-37.5	-13.0	-24.5	
5.2500	-1.1	V	3.0	40.9	1.0	-41.0	-13.0	-28.0	
7.0000	5.5	V	3.0	41.0	1.0	-34.5	-13.0	-21.5	
3.5000	1.7	H	3.0	40.3	1.0	-37.6	-13.0	-24.6	
5.2500	-5.5	H	3.0	40.9	1.0	-45.4	-13.0	-32.4	
7.0000	-3.5	H	3.0	41.0	1.0	-43.6	-13.0	-30.6	
Rev. 03.03.09									
Note: No other emissions were detected above the system noise floor.									